COMPUTERWORLD

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NEWSPAPER

News Update

IBM Conversion Ills Threaten Teale Contract

By E. Drake Lundell Jr.
Of the CW Staff

SACRAMENTO, Calif. – The whole future of the Teale Consolidated Data Center here may be in doubt since IBM is having difficulties in meeting the conversion deadlines called for in the disputed $19.9 million contract.

IBM spokesmen last week admitted during legislative hearings here that the firm had "underestimated" the complexities of the conversion of the department of motor vehicle records for the system and that that part of the project may be four to five weeks behind schedule.

At the same time, officials in the state government overseeing the project indicated there were also problems in converting the interim center to the new

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Uncertainty Clouds Court Ruling on FBI

WASHINGTON, D.C. – Civil rights lobbyists and FBI bureaucrats alike are taking a "wait-and-see attitude" in the wake of last week's precedent-setting ruling by the Court of Appeals for the District of Columbia that would require the FBI to remove from its criminal files the arrest records of persons who were later exonerated of charges [CW, May 1].

It now appears that the ruling will have little immediate effect until federal legislation, now pending, establishes actual procedures for implementing the court decision, the sources here said.

In the decision the court ruled that the FBI "had no authority to retain" the record of Dale B. Menard in its files.

Menard had been arrested in Los Angeles in 1965 on suspicion of burglary, but was never formally charged with the crime. His fingerprint card, nevertheless, was forwarded to the FBI and his name

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IBM Project Chief Finds

90% of Sites Lack Orderly Security Plan

By Don Leavitt
Of the CW Staff

ATLANTA – Users concerned with security hazards should look first at things that really happen and that have a high dollar impact if they do, Robert H. Courtney urged a bank DP auditors meeting here recently.

The manager of IBM's data security and privacy project told the Eastern States Association of Bank DP Auditors to have more than a "knee-jerk" response to a suddenly exposed security problem. In the past four years, he said, he has visited some 400 DP centers and "almost 90%" didn't have any orderly approach to the security question.

Problem Checklist

He pointedly avoided any discussion of IBM's multimillion dollar effort related to internal security of computer systems themselves. Instead, he gave the auditors a checklist of items they should recognize as major problems they could handle.

First on his list – "by a wide margin" – is the problem of errors and omissions, and simple "mechanical errors" by employees who are certainly not disloyal. Two separate runs of a bank's checking account system in the second and then the third shift of a service bureau operation, he noted, created chaos among the center's customers.

Dropping a disk pack and then attempting to use it without having it checked by a customer engineer has ruined "many a spindle, and then more disk packs when they were used on the damaged spindles," he said.

Courtney cited disloyal employees as the second most serious problem the auditors should consider. But he was clearly pessimistic about what the auditors – or almost anyone else – could do about this problem. No one knows how large the problem is, he said, and many companies are reluctant to prosecute even if they do finally catch an embezzler.

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NCC to Hear Results of IBM Study

CHICAGO – Full results of IBM's two-year, $40 million study of the issue of computer security are scheduled to be presented here at the National Computer Conference, Thursday, May 9.

The report will run a total of 25 volumes and contain 4,000 pages of information on the philosophical background of the security and privacy problem, specific technical moves that can be taken to protect privacy and an analysis of the efficiency of those moves. Robert H. Courtney, manager of IBM's data security and privacy project, will deliver the report.

Vice-President Gerald Ford will also address the convention outlining the Nixon Administration's program to protect the privacy of data on individuals.

Should DP Firms Trade With the East?

Two bills that could play an important role in increasing or reducing business for U.S. computer manufacturers with Eastern Bloc nations are up for renewal this year – the Export Administration Act of 1969 and the Export-Import Bank Act of 1945.

The debate over easing trade restrictions – especially on sales to the Soviet Union and Eastern European countries – centers as much on political philosophy as on business and technical subjects.

Following are two conflicting philosophical views on the subject – views which will be an important part of the national political scene for the next year.

FOR

Ups Trade Balance

By Nancy French
Of the CW Staff

WASHINGTON, D.C. – Without the sale of computer equipment overseas last year, the U.S. may well have ended up with an unfavorable balance of trade, William C. Norris, chairman and chief executive officer of Control Data Corp., indicated here last week.

Pushing for more trade with Eastern European countries, Norris said the favorable balance of trade in the computer industry amounted to $1.3 billion, while for the nation as a whole the favorable balance only reached the $700 million mark.

If the computer industry is going to continue to bolster the U.S. balance of trade, "the industry needs help from the government to create a climate facilitating trade rather than stunting its growth and making us difficult to do business with," he added.

"There can be little doubt that since 1945 export legislation restricting the overseas sale of computer technology has been our intention." Rather than continuing broad restrictive trade policies "to protect the national security," Norris suggested that what constitutes a "national security problem" might be interpreted better by government with help from industry people.

Testifying before the International Finance Subcommittee of the Senate Committee on Banking, Housing and Urban Affairs, and later the House International Trade Subcommittee of the Banking and Currency Committee, Norris criticized the implementation of the present Export Administration Act citing specifically the impotence of technical advisory committees in setting policy and helping determine which commodities and technical data are, or should be, subject to export control for national security reasons.

The present system allows committee members to "serve as individuals and not as industry representatives," he said.

Although they were intended to advise and assist the Secretary of Commerce in carrying out policy concerning export

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AGAINST

Like Selling A-Bomb

By Nancy French
Of the CW Staff

ALTON, Ill. – The American computer manufacturers who sell computers to the Soviet Union can be compared to those individuals who turned over U.S. atomic secrets to the Soviets – people "who were punished by jail and death sentences," a prominent Republican charged last week.

"It is our computer technology that is keeping us ahead of the Russians . . . A computer purchased ostensibly for crop planning can also be used to compute trajectories of intercontinental ballistic missiles with MIRV warheads," warned Phyllis Schlafly.

The conservative Republican spokesperson, author of *A Choice Not An Echo,* made the remarks in a recent *Spectrum* broadcast over the CBS Radio Network, and she explained her position in a telephone interview last week.

'Russians Pay 10%'

"It doesn't make sense," she said, "to reward those people who turn over our computer technology to the Soviet war machine with Export-Import Bank funds. The Export-Import Bank gives a loan of 45% of the cost of the computer, and then [it] will guarantee a loan from a private bank like the Chase Manhattan for another 45% of the purchase price. Then the Russians only put up 10%," she said.

"Furthermore, Ex-Im, as it is called, gives loans at 6% and 7% interest rates and you know what kind of rates we're paying now. That's very preferential treatment. And I don't know what kind of security – if any – they are putting up," she said.

"Compare this to an American firm that wants to get a loan.

"If you're a blue-chip company like

(Continued on Page 2)

Century Line Set For 3 Additions

By Vic Farmer
Of the CW Staff

CINCINNATI – NCR is slated to unveil the Century 151, 201 and a lower-priced version of the Century 50 here this week at the annual meeting of the NCR Users group. The Century 151, an intermediate step between the Century 101 and 200 systems, is the first NCR mainframe to use 1K-chip metal oxide semiconductor (MOS) memory similar to that used in the recently announced Control Data and Honeywell computers.

The basic 151 starts with 32K MOS memory which can be incremented to 128K. Cycle time is 750 nsec per three bytes (the 101 is 1.2 μsec per two bytes, the 200 is 650 nsec per two bytes).

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Security Chief Finds Sites Lack Orderly Approach

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Fire was next on Courtney's list. Though the probability of a fire is low in most DP centers, the dollar impact from a fire can be extreme. Most centers have made poor choices of fire-fighting or detection equipment, have put it in the wrong places and have no serious plans for recovery after a fire, the auditors were told.

Disgruntled employees can cause serious problems, Courtney noted, even if they aren't interested in the same financial gain as a potential criminal.

To illustrate, he told of a tape librarian who was left on the job even after she had been given her notice. Systematically she shifted outside paper labels from one reel to another and finally labeled blank tapes, leaving the library worthless by the time she departed.

Water and other leakages ranked number five on Courtney's checklist. He was less concerned about natural disasters over which DP centers have little control than he was about man-made situations, and the meager efforts made to offset such problems.

He urged the auditors to see that their centers had a supply of heavy-duty plastic sheeting – and scissors. You can't cut the stuff if scissors aren't there" – to protect equipment from leakage.

Plan Ahead

Plan, too, to avert problems before they take place, he went on. He cited a large DP center that was positioned between a paint shop and a paint supply area, with a pipeline between the two above the computer. The pipe broke one day as zinc chromate was being moved, and as a result, IBM had returned to it "the most completely rustproof 195 in the world today."

Data communications was the sixth area on Courtney's list. This concern should cover terminals and other equipment, he said, but may usefully include human communication as well.

To illustrate how misinterpretation can, in some cases, be a deliberate goal of the person preparing a statement, Courtney told the auditors of a radio ad that asked, "Are you getting only 5 point three percent interest for your savings?" Then threw in the zinger: "We'll pay you 5 point 18 percent."

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CONTRIBUTORS: **J. DANIEL COUGER,** *education column;* **ALAN TAYLOR,** *Taylor Report* and *professional practices.*

NEAL WILDER, *vice president – marketing.* **DOROTHY TRAVIS,** *sales administrator.* **JUDY MILFORD,** *advertising coordinator.* **KATHRYN V. DINNEEN,** *market research.*

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EDITORIAL OFFICES: 797 Washington St., Newton, Mass. 02160. Phone: (617) 965-5800. Telex: 92-2529. **Los Angeles:** 963 N. Edgecliffe Drive, Los Angeles, Calif. 90026. Phone: (213) 665-6008. **Europe:** Computerworld, c/o IDC Europa, Ltd., 140-146 Camden Street, London NW1 9PF, England. Phone: (01) 485-2248/9. **Asia:** Computerworld, c/o Dempa/Computerworld Company, Dempa Building, 1-11-15, Higashi Gotanda 1-chome, Shinagawa-ku, Tokyo 141. Phone: (03) 445-6101. Telex: 26792.

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Trading With East Will Up Trade Balance: Norris

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administration, the activities of the committee have been limited to providing technical advice in the strictest sense of the word – effectively barring the committee from policy considerations, he noted.

Rather than the present system in which each transaction with a Socialist country is subject to a separate determination from the President, and a subsequent report to the Congress within 30 days, Norris recommended that the President issue a blanket authorization, subject to whatever Congressional review procedures might be reasonable.

Military Projects

Norris said that given the current state-of-the-art with regard to computers in the Soviet Union, "there is no evidence that the USSR has been unable to carry out any important military projects for the lack of computer technology. Their computers are only three to four years behind our own," he said.

He pointed out that the Eastern European countries have developed their own computer industry based on the Ryad family of computers.

"Although somewhat behind schedule, computers are being delivered now," he said. He warned that at least one model, the 1040, is being prepared by East Germany for export markets, and potential Eastern European customers are being directed to use Ryad equipment rather than the computers of U.S. or Western European manufacturers.

Norris defended the Export-Import Bank, saying the bank provides "the lifeblood of many U.S. corporations doing business worldwide including with the Socialist countries.

"Local financing is not always obtainable," he said, "and moreover, local financing is available at rates or under conditions that render U.S. prices noncompetitive versus foreign manufacturers who are enjoying the benefits of export incentive programs."

"Control Data is seeking cooperative ventures involving technology interchange with the Soviet Union," Norris said.

Fair Exchange

He emphasized, however, that Control Data wasn't interested in giving away something for nothing – or even for cash.

"Basic to our concept of cooperation is our policy that Control Data does not normally sell technology, but will only offer it where improved access to the market is realized or technology of equivalent or greater value is received," he said.

In technology interchange of this type, "program phasing is a key ingredient – the rate of the transfer of technology from Control Data," for example, depends upon the "flowback of technology from the USSR."

Norris noted that trends have changed. "All the simple things have already been done with computers. Future computer technology challenges lie mainly in the development of applications software" rather than hardware.

"Many areas of computer applications will be at best seriously delayed" until the cost of developing the programs can be spread – especially in education and health care – areas that are "beyond the capabilities of one country, let alone one company," he said.

"The USSR is an extremely attractive partner for cooperative activities in health care and education, since they have the structure to implement pilot procedures of a substantial scale, which we believe are a necessary ingredient to major progress in applying computer technology to these fields," he said.

Like Selling A-Bomb: Schlafly

(Continued from Page 1)

General Motors, you can borrow at the prime rate which is 10-1/2%. If you're somebody else, it'll probably cost you 11%. Then the bank won't put up more than about 60% of your planned expenditure. You have to put up the other 40% yourself," she said.

The duration of your loan will be about 10 or 15 years if you have good salable real estate to secure it, or maybe five years if you have non-real estate security," she continued.

"Now, compare that to the Russians. We know they have a bad credit rating. They never did pay back their $11 billion lend-lease debt from World War II. And we've now agreed to compromise that at about seven cents on the dollar," she said.

"Instead of paying 11%, like U.S. businessmen, they're paying only 6% interest. Then they are getting 20-year loans, roughly double what American borrowers can get, and finally, in the end, the poor old taxpayer ends up footing the bill," she said.

"The American taxpayer foots the bill because the Export-Import Bank guarantees the loan, and when it's not repaid, [the bank has] a claim-right directly on the U.S. Treasury.

"The businessmen who are promoting this kind of trade don't stand to lose anything," she said.

Asked whether she objected to the sale of U.S.-manufactured computers to the Soviet Union because of their alleged failure to pay their bills, or because of the possible loss of our technological advantage, Schlafly said, "I object to it on both grounds. Especially because of the military advantage they are gaining.

"The Russians," she asserted, "are putting 40% of their gross national product, which is about half of ours, into weapons. We're only putting 6% of our gross national product into military spending and a large part of ours goes into payrolls and so forth."

Schlafly said this has become an issue in the last two or three years because government trade restrictions have been easing.

"To ship anything out of the country you have to get a shipping license through the Department of Commerce," she explained. Somehow those licenses just didn't get issued for computers until just the last couple of years. Things have changed and [the computer manufacturers] are getting them – not freely – but if they make a good case, know the right people . . .

"The earliest computer sale to the Soviets that we could track down was one sold in 1959 by Elliott Automation of England. England has been selling them for a while," she noted.

"Then, in 1972, Control Data Corp. sold a third-generation CDC 6000 system to the Soviet Union.

"The biggest supplier of computers has been an English firm – International Computers and Tabulation, [now ICL]. My information shows they have sold 27 of 33 large computer systems to the Soviet Union," she explained.

When asked why she was so convinced that the Soviets would use American-made computers in weapons systems, she answered, "Well, they are essential to the weapons. You can't send a space vehicle or a missile up without a computer."

To support her view, she said, "I think it's generally recognized that the U.S. is way ahead of everybody else and certainly way ahead of the Russians in computers.

"The Russians have been able to do a great many things," she explained, "but computer technology is their great deficiency. Our computers, on the other hand, have been fantastic. The Soviets are very eager to get our computers, just as they've been eager to get our wheat," she said.

Schlafly placed responsibility for easing trade with the Russians in the lap of Secretary of State Henry Kissinger.

"There's been a push for [a change in the trade policy] for years but I would say at the present time it's the Kissinger policy. The policy of our country always was to be militarily the strongest in the world.

"But with the advent of Kissinger, the policy of military superiority has been abandoned in favor of a policy of detente – getting along with the Russians – and giving them the goodies."

Tornado-Hit Xenia Cleans Up

XENIA, Ohio – While the cleanup of debris continues after last month's tornado [CW, April 17], Central State University's computer is getting a spring cleaning.

The NCR Century 100 has been removed from the administration building at CSU which was heavily damaged, and has been taken to the company's district office in Dayton where field engineers are replacing the entire filtration system.

Aside from excessive dirt, a firm spokesman said the system seems undamaged.

The Century 100 will be held at the district office until university officials decide where they want it delivered and installed.

Meanwhile, NCR has given CSU access to a Century 100 at NCR marketing/software headquarters in Dayton. The university is using the CPU five hours a day to keep up with its normal production work, such as updating the budget, student scheduling and payroll.

CSU students are attending other universities in the area which are providing classroom space. CSU officials expect 80% of the damaged campus to be rebuilt by next fall.

Board, Governor Split Over Arrest-Only Data in Files

BOSTON – Although Gov. Francis W. Sargent filed a bill two weeks ago to bar potentially discriminatory "arrest-only" records from a proposed criminal state data file, the state Criminal History Systems Board (CHSB) still might try to include such information in its planned criminal information computer system.

Much public disapproval of the board's move, according to CHSB legal counsel Richard Geltman, has caused the independent 15-member state organization to become virtually split as to a final decision.

CW Update

In three recent public debates across the state, many community groups, public affairs and consumer organizations, and the Department of Mental Health echoed the governor's position against the inclusion of "arrest-only" data in the state system.

Even though the present regulations of the proposed computer system require that non-conviction records be separated from those of convicted felons, a study of the CHSB proposed system conducted by the state committee on Criminal Justice revealed a major reason for the controversy. It stated that criminal justice agencies, according to present regulations, may obtain computer information, for example, "to conduct preemployment investigations" of job applicants.

The report also brought out that "up to 20% of the files which have been converted to data contain arrest information without any record of a court appearance for that arrest."

It went on to say that "in such instances, the arrested person may have been released by police or prosecutor without answering to formal charges in court."

As a result, the CHSB is still trying to determine why releases are not reported to the state police to complete and close the arrest records, Geltman explained. "We still don't know what the answer is," he conceded, adding, "A lot of people might not have been provided their rights."

Teale Center in Doubt

(Continued from Page 1)

consolidated operation and that the state was unlikely to accept the new system as scheduled on May 6.

In addition, a report to Senate Finance Subcommittee Number 1 also recommended that the amount of the award to IBM be cut by $5,639,611 because certain conversions called for in the contract can no longer be justified due to the problems IBM is having with the present conversions.

IBM admitted at the hearings to having problems with the conversion of the real-time portion of the DMV work, but other sources indicated problems were cropping up in the conversion of the batch-processing part of the DMV contract.

In total, the contract calls for penalties that could amount to as much as $10 million if IBM fails to perform as promised.

The other problems concern the Teale center itself where under the contract the state was to accept a dual configuration of 370/165s operating under ASP on May 6 to replace the interim center – one 165 under Hasp.

NCR Readies 3

(Continued from Page 1)

The 151 also uses the existing two-spindle NCR 657 disk drive to provide 96M bytes of storage per drive. Other previously announced components on the system include a 300 line/min printer, 300 card/min reader and a 30 char./min terminal printer terminal as an operator console. Two optional I/O channels are available.

NCR claimed the 151 will be competitive with IBM's System 3/15. The 151 is priced at $133,595 and rents for $2,675/mo on a five-year lease. Deliveries are scheduled to start in the first quarter of 1975.

The Century 201 uses the same core memory of the larger 251 and 300 Series of mainframes, and provides performance between the Century 200 and 251, according to NCR. The 201 has an enhanced I/O capability over that of the 200 and has eight I/O channels – one of which offers data transfer rates of 900K bytes.

The basic system starts with 64K memory which can be expanded up to 512K. It also includes a previously announced 300 card/min reader, 1,500 line/min printer and an NCR 657 96M-byte disk drive.

Seen by NCR as competitive with the IBM 370/145, the basic system 201 can be purchased for $300,000 or rented for $5,525/mo on a five-year lease. Deliveries will begin in the third quarter of this year.

NCR also announced a lower-priced version of the Century 50 – the Century 50/Model I.

The Model I leases for $1,050/mo on a five-year lease and is $250/mo cheaper than the standard 50; however, the Model I has a slower 125 line/min printer and NCR has unbundled a major portion of the programming field support applications. For both Century 50s, NCR has also added a $125/mo CRT console for users wanting to use the system interactively in a dedicated mode. The Model I will be available in the third quarter of this year.

Uncertainty Surrounds Effect of FBI Ruling

(Continued from Page 1)

entered into the computerized system, where it has been ever since.

One observer pointed out that the ruling would have had more impact if it had been handed down even two years ago when the public did not really understand the issues involved. In the past few years, the issues have gained wide understanding and support on the part of the public, he said.

Dorothy Glancy of the Senate Subcommittee on Constitutional Rights feels that a person currently wishing to have his FBI record corrected would have to sue the FBI.

"The FBI may be faced with a huge volume of cases as a result of this decision," she said.

Others feel this won't happen – that, instead, pending legislation will determine how and when the FBI begins to act on the matter.

"The FBI doesn't like it," Douglas Lea of the American Civil Liberties Union Privacy Project said. "It's like cutting off one of their fingers. They think of the files as just another tool; yet when they're asked to show what type of value a simple arrest record has for them, they have no facts or figures to prove it," he said.

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Seeks Evolutionary Change

ABA Finds Public Apathy Over EFTS

By a CW Staff Writer

WASHINGTON, D.C. – It is "now timely and important to begin to assess" the future directions of computer-based electronic funds transfer systems (EFTS), but there is not yet a "climate of urgency" over such development, the American Bankers Association (ABA) said recently.

While it is important to begin to "measure the impact" of EFTS, the association said "this assessment, however, should be undertaken with the recognition that recent research shows a relatively high degree of satisfaction on the part of the public" with the current way of doing banking business.

Evolutionary Change

As a result of public apathy over the development of such systems, the ABA, in a letter to the Federal Reserve System, recommended "an evolution of new approaches and services, justified through market acceptance," rather than "initiating near-term, major overhaul of the system."

The Federal Reserve, the letter said, "should proceed with due care and great caution" in shaping policies that will affect the development of future EFTS programs.

Today, the letter said, there is a great deal of activity in the EFTS area, including:

- "Federal Reserve operation of automated clearinghouse facilities at request of and under control and ownership of regional automated clearinghouse associations.
- "Rapid growth of local automated clearinghouse study groups.
- "Approval by the ABA Board of Directors of a National Automated Clearinghouse Association.
- "Increased marketing activity in the areas of direct pay depositing and prearranged payments.
- "Various pilot operation of POS related payments.
- "Emphasis by retailers on POS systems and the resulting relationships with financial institutions.
- "Implementation of national electronic bank card networks.
- "Increased market activities on the part of EFTS-related computer, communications and peripheral vendors."

Who Needs It?

But even with all this activity, there is little call among the public for the initiation of EFTS systems, the group indicated, despite "rising costs for operating the payments system, and continually increasing paper volumes."

However, there are some steps that could be taken today to allow future growth of the systems, the group indicated.

> *The plan needs "further definition and clarification of terminology and procedures . . . the use of the electronic debit transfer mechanism should be approached cautiously." – ABA statement*

First, "criteria and standards for interdistrict transfers should be formalized now, and be made common to all districts," the ABA told the Federal Reserve.

Secondly, "security provisions should be defined" for the operation of EFTS systems, the association said.

In discussing the role of the Federal Reserve in aiding the electronic transfer of funds, the ABA said the organization "should not seek to expand the scope of its services or the market for these services in ways which would endanger the survival of competing facilities."

The group also warned that direct access to any EFTS program run by the Federal Reserve should be limited to banks and not open directly to other institutions such as savings and loans.

'Several Concerns'

A proposal to allow member banks to use Federal Reserve facilities to collect funds electronically from another bank without customer prenotification "has the potential for effectively reducing paper volume over time," the group said, but added that the proposal raised "several concerns."

First, the plan needs "further definition and clarification of terminology and procedures," the ABA said, adding that "in view of the Federal Reserve's position of not accepting any liability, the use of the electronic debit transfer mechanism should be approached cautiously."

There is also a need for user protection features in the plans, the ABA said, including the right of the user to refuse to debit through the system without preauthorization.

In addition, the ABA said, "We do not consider large dollar items to be an appropriate part of the proposed system, because they do not contribute significantly to volume, and a substantial percentage of large dollar transfers are already effected by electronic means.

"Additionally, the concern over liability grows proportionately with the size of exposure per item," the ABA noted.

The Federal Reserve should not let technological advances "alter the scope and extent" of its role in the nation's check-clearing system, the ABA said, even though it should upgrade its facilities to provide more efficient service in that role.

"The Federal Reserve," the ABA said, "should avoid domination of these services; and the choice of alternative systems, as available today for check clearing, should continue," the ABA indicated.

Credit Files Opened

ATLANTA – Retail Credit Co. has bowed to increasing public pressure and the threat of a Federal Trade Commission examination by allowing consumers to see their entire credit records held by the firm.

Effective June 1, W. Lee Burge, president, said consumers who request it may read all reports submitted about them. Previously consumers had only been entitled to an oral discussion of their reports when those reports were used in investigations of their credit rating.

The actions of the firm go well beyond the requirements of the Fair Credit Reporting Act, which required the verbal explanation, Burge said.

However, a recently instituted FTC action had charged that the firm failed to disclose all relevant information to consumers in such oral reports.

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'System Reliability Meetings' Keep Multivendor Shop's Uptime Over 99%

By Patrick Ward

Of the CW Staff

CHICAGO – In September 1972, the Blue Cross Association here, which does payment and credit authorization for local Blue Cross organizations across the country, was experiencing 20% to 30% downtime with one of its two HIS 3200 CPUs.

To resolve the problem, the association set up periodic meetings with HIS, setting specific time periods for the vendor to search through possible sources of the trouble and to report back, according to Eugene V. O'Halleran, senior computer operations manager.

Finally HIS traced the problem to a memory fault which was bothering other users. However, the Blue Cross Association decided to keep the problem-resolving meetings, formalize them under the name of "system reliability meetings" and extend them to all the association's vendors.

The Blue Cross Association is an all-HIS shop with over $4 million of purchased equipment. One of the two 3200s is dedicated to teleprocessing, and the other to administrative work.

CPU and memory uptime is now at 99.5%, O'Halleran noted, and the operating system's uptime is at 99.8%.

The Blue Cross Association went to an HIS OS 2000 operating system a year after its system reliability meetings began.

The association soon found 37 bugs in the operating system, O'Halleran said, and presented them in documented form to HIS on the first of January. A month and a half later HIS had resolved 23 of them, he noted.

Ten days is now the average time it takes Blue Cross to get a fix in the HIS software, O'Halleran added.

Because of its communications net, the association also deals with Western Union, which supplies it with about 35,000 miles of leased lines and 140 teletypewriters and Model 1259 modems.

Additionally, the association leases 20 Texas Instrument (TI) 960 minicomputers at remote sites for transmitting claims data.

O'Halleran said his group does its own testing and troubleshooting for problems. This allows the association to convincingly tell a vendor that the problem lies in his equipment, and so cuts down on "finger-pointing" between vendors.

Blue Cross now holds separate systems reliability meetings with each of these three vendors once a month, and vendor attendance is mandatory, O'Halleran stated.

Vendor representation typically includes the branch manager in charge of marketing for the area; the local sales representative; the manager of field service; manager of branch services; and for TI and HIS, the software manager for the area.

Blue Cross people open the meetings with a documented report of a problem, citing their view of its cause.

"We try to tell them where the problem is," O'Halleran said. "We say we want the problem resolved in a set time. They agree."

Blue Cross documents the agreement, and "thirty days later we ask them what they've done about it," O'Halleran remarked.

Follow-Up Key

The whole idea of the systems reliability meetings is to get top personnel together and then to follow up on how vendors have solved the problems, O'Halleran commented.

The written documentation means Blue Cross won't forget about a problem or the agreement to solve it "because we have a mechanism to keep bringing it up," O'Halleran observed.

"Getting a commitment from vendors to participate with high-level people" is the biggest obstacle to the success of a systems reliability meeting approach, O'Halleran noted.

"This interaction requires a lot of time when you start," O'Halleran observed. Then, the program picks up, he said, and vendors "have no problems with attending meetings."

It is unlikely that the systems reliability program would be as good as it is without the active role of a Blue Cross vice-president, O'Halleran stated. That vice-president's signature on letters makes a difference, he said.

In the rare instances where a vendor doesn't perform as agreed in the meetings, the Blue Cross vice-president calls a person of equivalent rank in the vendor corporation, O'Halleran noted.

A key part of the persuasion, he stated, is to emphasize the positive things good performance can mean to the vendor's image in the eyes of other user organizations familiar with the Chicago authorization center, O'Halleran said.

If persuasion doesn't work with vendors, O'Halleran observed, "we threaten to penalize them. If we're paying $3,500/mo maintenance, we will just cut the payment," he said.

But usually the vendors keep their commitments, O'Halleran said. "It's future business that they're after," he explained, and "their commitment is based on the fact that they want future revenue."

Sanders Abandons Teale Suit, IBM Named in Univac Action

SACRAMENTO, Calif. – Univac has added IBM's name to its suit against the State of California over the Teale Computer Center award, but Sanders decided to abandon the matter instead of adding IBM as a defendant [CW, April 3].

A source close to the Sanders legal effort indicated the firm "didn't want to air its antitrust grievances with IBM in a California court."

Rather, he said, the firm wanted to leave the issue of possible IBM antitrust violations out of the Teale case and possibly use them later in a broader suit against IBM for overall antitrust violations – and, he noted, if such a suit is forthcoming, it would probably be filed in Sanders' backyard in New Hampshire.

Since a California court had ruled that Sanders could not go on with its suit against the state without naming IBM as a defendant, the firm decided to drop the entire issue, he said.

It is understood that IBM is presently negotiating with Sanders in order to resolve the differences between the two.

On the other hand, Univac updated its suit against the state by naming IBM, Boeing Computer Services and Data 100 as "real parties of interest" in the case in a new submission here.

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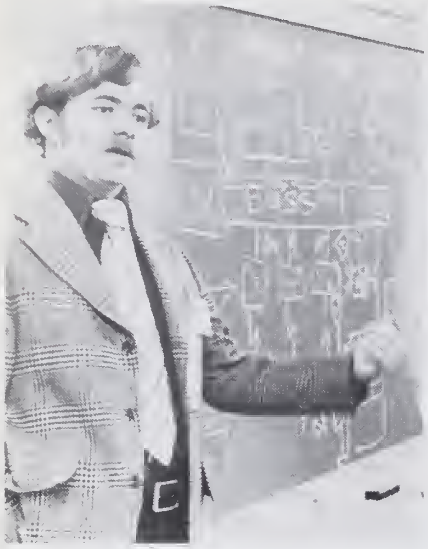


William G. Gallager gets technical on front-end processors.

Data General, Cullinane and Calcomp booths draw user attention.

Attendees look over Infoterm terminals used with the Prime 300 Virtual Memory System.

Caravan 74: Traces of Faces, Places

AT&T demonstrates the Dataspeed 40.

The Sycor 340 is viewed through a fisheye lens.

Scott Leeseberg makes a point on optical scanning.

General Computer Systems' staff shows off System 2100 for data entry.

Dr. Frank Ryan advocates more computers for Congress.

CW Staff
Photo Feature

DEC VT05 terminals are available for playing games.

Editor Ed Bride (standing) gives *Computerworld* report during data communications forum.

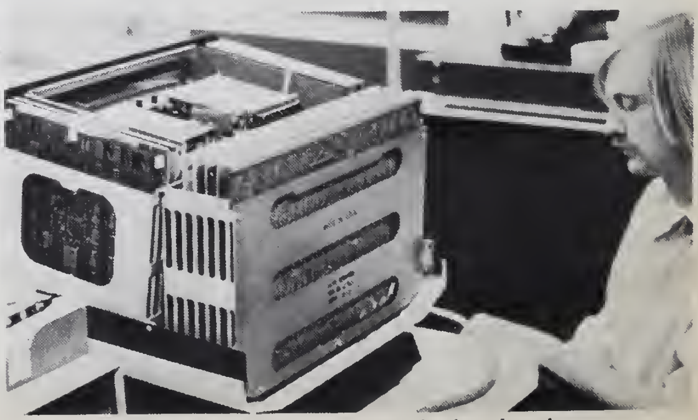
Edward Dolan expounds on the benefits of intelligent terminals.

Darwin Eschback talks about small systems management.

Stephen J. Vozella speaks on data communications.

Quantor's 305 Microfiche Viewer in action.

Herb Grosch (lower left) gathers reports from source data automation panelists.



Incoterm intelligent terminal minus housing.

Programmer Training, Appraisal a Unique Specialty

NEW YORK – Programmers and analysts are in a special data processing job category, one for which performance and effectiveness are regarded as the most difficult to measure, according to a Computer Caravan session on personnel here.

The difficulties range from determining the necessary qualifications for an entry level programmer, to training and finally to evaluation of performance.

The first step in hiring an entry level programmer is to determine what qualifications he *must* have, and to separate these from those you would like him to have, said Joe St. Onge, training director for Pepsico.

There are four necessary elements in effective employee selection, he said: detailed job definitions; good communications – with the employee, the personnel department and with each other; disciplined interviews; and good recordkeeping to determine if the original decision to hire was right.

Once the programmer has been hired, training to enhance productivity becomes the overriding goal, according to Linda Jones, senior analyst at Loeb Rhoades.

One important skill Loeb Rhoades expects entry level programmers to have after training, Jones said, is the ability to work as a member of a team. "We expect them to be able to accept criticism," she said, "to take a beating for the sake of getting the job done."

Programmers must also be able to design programs and modules, have mastered language syntax, have some knowledge of JCL, have some experience with program maintenance and understand how to utilize software.

To achieve these goals, she said, programmers are trained in groups of four to six for two to three months.

The team concept in programming was also praised as a way to better evaluate personnel performance.

David A. Nelson, independent consultant, noted, "Usually we have had to rely on personal observation and project leader appraisal, in lieu of concrete criteria, for evaluation. Today, the productivity improvement techniques being promoted by IBM provide much more comprehensive and objective data for programmer appraisal than any management methodology I know."

Nelson stated that all too often evaluations are based on extraneous, but readily observable indicators, such as neatness, punctuality, politeness and the ability to look industrious.

"IBM is rather stridently urging all of us to adopt these productivity techniques as the methodology for all program development projects," Nelson said. These techniques include the "chief programmer team" method of operation, top-down program development and structured programming.

These new techniques, he said, allow a manager to measure the accomplishments of the team, and each team member, in terms of such work output as coding submitted for keypunching, adding and updating program modules, assembling or compiling programs and submitting test runs for execution.

Careful Planning Can Preclude Problems of Multivendor Shop

By Toni Wiseman

Of the CW Staff

CHARLOTTE, N.C. – Multivendor installations have only become common in the last three to four years because, although hardware technology would permit a mix, the technical expertise within the average company did not allow it.

David P. Winstead, manager of data processing technical services for Pilot Life Insurance Co., gave some insight at a Computer Caravan session here into the problems and possible solutions a mixed shop can expect to encounter.

The central processors at Pilot Life are an IBM 370/135 and a 360/40. Other equipment includes two Cincinnati Milacron Apps 2000 minicomputers, a Honeywell Keyplex key-to-disk system. Terminal Communications TC160 CRT, Control Data Corp. 23142 double-density disk and Fabritek add-on memory.

A multivendor installation can present many problems, Winstead said, but many of these can be avoided with careful planning or resolved with intelligent handling.

Caravan/74

For instance, Winstead said, second vendor (SV) equipment is normally 15% to 20% below prime vendor (PV). This means it is not difficult to realize savings of $5,000/mo or $60,000/year or more for a medium-scale installation.

Preventive maintenance (PM) scheduling can create a problem, he said, because not infrequently, both vendors will require the mainframe equipment for executing diagnostics and hardware tests.

"Since only one vendor can run his diagnostics at a time, your average PM allowance can be expected to increase proportionately," he said.

Rescheduling PM can alleviate some of the inconvenience caused by a lengthier PM time, he said. Another solution is to coordinate PM steps between vendors so that possibly both are able to execute their diagnostics at the same time.

Increased lapse time between failure and fix can result from the time you spend deciding which vendor to call, Winstead said. "In addition, arbitrating a 'finger-pointing' situation may cause lost time if a quick decision cannot be reached as to which vendor is responsible for fixing or diagnosing the problem," he said.

One solution to this dual problem is to designate the responsibility of problem prediagnosis to someone – possibly the systems programmer – who is likely to be proficient in both hardware and software areas, he opined.

"One alternative to prevent finger-pointing is to contract for third-party maintenance," Winstead said, "or contract with one of the vendors to maintain all equipment.

"Another method of reducing finger-pointing is to specify by contract that one of the vendors, usually the SV, is always responsible for any diagnosis when there is reasonable doubt as to which vendor has the problem," he added.

Winstead listed lower costs, better competition, specialized services and products, and the ability to shop and compare as the benefits a multivendor installation can expect.

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Joint Data/Voice Facility Drops Cost of Growing Net

By Patrick Ward
Of the CW Staff

NEW YORK – A firm that combines its data and voice nets can lower its data communications costs even as volume rises, Robert Madan told a Computer Caravan workshop on on-line systems here.

Madan spoke from experience. He and a counterpart handling the voice nets, work directly under the vice-president in charge of communications at Equitable Life Assurance Co.

Equitable had earlier done a study of all the phone calls made in its offices over a three-month period. The company decided it could save money by putting in private line services between some of its offices, and an on-line data communications network is now built upon this voice backbone.

By procuring the private lines in bulk, Equitable trimmed its data communications cost even as volume mounted sharply, Madan said.

The company has an on-line system in which 142 IBM 1050s, 15 GE Terminets, 28 Model 35 and 30 Model 30 teletypewriters and a PDP-11 system access IBM 7080 and 370/168 CPUs, Madan said.

A Comten Model 60 programmable front end serves both host computers. The front-end system includes its own drum, disk and tape peripherals, Madan said. It does all administrative switching of the 128 lines without interfering with the hosts, Madan continued.

The front-end system also logs all incoming data and queues it on a drum. The front-end can monitor how much core is available, Madan explained, and when there's not enough available, it can switch data to the disk.

Regulated Batches

Equitable's on-line approach brings data to the hosts in regulated batches, depending on the priorities of the incoming messages.

The idea is to balance the system, "distributing the workload to where there is the capacity to handle it," Madan explained.

Customized software in the front end sets the priorities, which Madan said has allowed throughput to climb from 60 to 80 message/min to almost double that now.

While regulating the host processor helped in this case, Madan said users should avoid doing it unless it is necessary.

He also cautioned on-line systems users not to write applications programs for particular types of terminals, but instead to write the program and then add on the particular terminal interfacing.

Then if the user later decides he'd like to go to a different type of terminal, he'll have less of a problem, Madan noted.

Caravan/74

Students Honored For DP Endeavors

NEW YORK – In an effort to foster interest in careers in data processing, Raytheon Data Systems has honored an outstanding high school student in eight of the 10 cities visited by the Computer Caravan.

In each city, Raytheon contacted the superintendent of schools and asked that he select the area school system with the most advanced curriculum in computer studies. A student from that school was then chosen on the basis of high academic achievement and interest in the data processing field.

Selected students were invited to the Caravan, to allow them to see the various systems on exhibit and to get a chance to talk to people in the industry.

The students selected were: Roland McDonald, Ballou School, Washington, D.C.; Jan Becker, Walnut Hill High School, Cincinnati; Jay Thomas, High School of Visual and Performing Arts, Houston; Tony DaVanzo, Los Alamentos High School, Anaheim; Raymond Bazemore, Woodrow Wilson High School, San Francisco; Edward Dorner, St. Patrick's High School, Chicago; Charles Hale, Boston Technical High School, Boston; and Mordecai Beizer, Stuyvesant High School, New York.

'See You Next Year...'

Peak Periods Vital in Network Plan

NEW YORK – The teleprocessing user planning a network has to take into consideration factors such as peaks in his business, according to Tim McDonough, manager of teleprocessing systems for GAF Corp. He explained that in its original planning, GAF had failed to compensate for the peak summer business periods.

"Break your messages down into characters," he said, " and when dealing with forms, don't leave out spaces, control characters, etc."

How Urgent?

The next criteria McDonough covered is urgency – how soon information must be at its destination to be useful, how much delay can be tolerated, what the consequences of delay are and when the point of no return occurs.

"Volume and urgency are the two factors which determine the line speed," McDonough said. "And they can also determine the number of terminals you want to have out there in the field."

Distribution is another criteria essential to network planning, he said. This includes the number of data sources and points of distribution.

"This is where you really start to design the teleprocessing network, McDonough stated," and where you should begin to consider existing facilities."

Taking a good look at what facilities the company already has can save a lot of money when it comes to implementation of the network, he said.

Two Dozen Cheaper

Taking one of many examples, he said, GAF bought a Bell Telepak facility which provides 24 voice grade circuits between a Rensselaer, N.Y., installation and corporate headquarters in New York City. The company was only using 21 of these for voice, he said, but was paying for 24 because it is cheaper to buy the package than to buy 21 separate lines.

The cutoff point occurs at around 18 lines, he said.

When it was decided to implement the network, GAF was able to take two lines for data transmission, "and it didn't cost us anything because we already had the extra lines," he said.

Language is the next area to consider, he said, the code form in which the data is to be transmitted. "You have to start thinking about the multiple terminals in the network," he said.

"For instance, a 3705 only operates on one block length, and what happens if you have a terminal that doesn't block?"

Accuracy is also important, McDonough said. "Remember that redundancy is expensive.

"Most errors in teleprocessing networks come from the telephone lines," he said. "When you're in a telephone company environment, dedicated lines are less prone to errors than DDD or Wats lines because you're not sharing switching equipment with anyone."

This is important, he said, because at a peak time with dial-up a call may be switched from Los Angeles to Butte, Mont., to New Orleans, Chicago, Philadelphia and Boston before it arrives in New York. "You can't hear it on a voice call," he said, "but it can kill you with data."

'Keep It Neat'

McDonough's final admonition was to "keep it neat and keep everyone's hands off. You don't want a lot of people getting into the guts of the system if you are the one who is responsible for the network function.

"The real question is how much manpower the company can afford to spend on the project," he ended.

'Antidote Central' Aids Possible Poison Victims

WRIGHT-PATTERSON AIR FORCE BASE, Ohio – The Air Force Avionics Laboratory here is dedicating a portion of its information and retrieval system, on a trial basis, to provide the base hospital support for a new poison control center.

An IBM 370/145 is providing doctors who man "Antidote Central," as it is known to base residents, instructions for treating patients who have ingested toxic substances.

A worried mother who has rushed into the hospital's emergency room with her son whom she suspects has swallowed a cleaning liquid might be treated as follows:

The doctor, accessing the computer with a Computer Communications CC-30 terminal, requests the files on cleaning liquids from Antidote Central. Within seconds, the console begins to display information on the product including its type, manufacturer and a breakdown of its ingredients.

Toxicity based on ingestion levels per weight group also would be listed.

A description of the symptoms to look for in the patient and how to treat them would also appear, and finally, all other known sources of information would be suggested to assist the doctor in making quick treatment decisions.

Used primarily for technical control and management, the system is a full text, interactive, flexible data retrieval system for use by nontechnical terminal operators.

The basic computer program was developed by Mead Technology Laboratories, Dayton. It supports 250 users with 68 remote terminals on Air Force bases coast-to-coast.

The Poison Control Center support service constitutes only about 1% of the work done by the base computer center, according to Jim Sayne, a public information officer.

If it proves successful, Sayne said the system will be expanded throughout the Department of Defense. Although it is technically feasible, no plan is presently being considered to tie in civilian hospitals.

Train Dynamics Studied

HUNTSVILLE, Ala. – The Nasa Marshall Space Flight Center here has begun a 20-month project to study the vibrational characteristics of railroad freight cars, geared to producing new information about the dynamic performance of long trains.

The first portion of the project involves gathering all available information about freight car vibrational characteristics. This information will be fed into a CDC 6500 and later processed with a Univac 1108 to check the accuracy of a mathematical model of the track-car dynamics.

Patients in Need Singled Out

COLUMBIA, Mo. – Suicidal and dangerous patients – sometimes lost in the myriad of patients and medical data here – are now readily identified by computer.

Eleven state mental hospitals, now tied to the University of Missouri Institute of Psychiatry Computer, can quickly determine which patients are in need of immediate medical attention because of acute mental problems. Before the computer link-up, according to a UM spokesman, medical records some three and four inches thick on each patient had to be perused by ward physicians to determine priority cases.

Now, however, doctors can get instant printouts with relevant medical data on patients who are most in need of treatment, he added.

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Series 60 has been designed to make it significantly easier to tap the power of the computer for results on the spot.

Series 60 offers new Honeywell advances in data base technology, information networking, and transaction processing—capabilities that will play a dominant role in computer operations of the next decade.

Series 60 complements Honeywell's already extensive product offerings. It includes seven computer models of advanced design, plus a variety of new peripherals.

With Series 60 we've enhanced our proven GCOS executive system and made it the basis for a graduated set of software capabilities tailored to match different levels of hardware performance.

Plus we're taking a number of other steps to provide users—regardless of their present systems—with a smooth and evolutionary path to increased performance.

So now, more than ever before, Honeywell has the capability you need for the results you expect.

If you're ready for your first or second computer, The Honeywell Information System is easy to understand, easy to install, and easy to use.

If you're an experienced user who is outdistancing the capability of your present equipment, The Honeywell Information System is the logical next step to increased performance.

And if you're a large user, The Honeywell Information System can provide superior efficiency in managed distribution of your company's information. Through use of Honeywell minicomputers, you can handle a complex information network operating in a variety of processing dimensions.

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Honeywell's dedication to customers is the cornerstone of The Honeywell Information System.

With the development of Series 60, we've provided for the protection of our customers' current investment in hardware, software, and programming. Series 60 lets you continue with your current Honeywell equipment for as long as you want. And when you're ready to move to increased performance, you can make the move easily and with your application investment intact.

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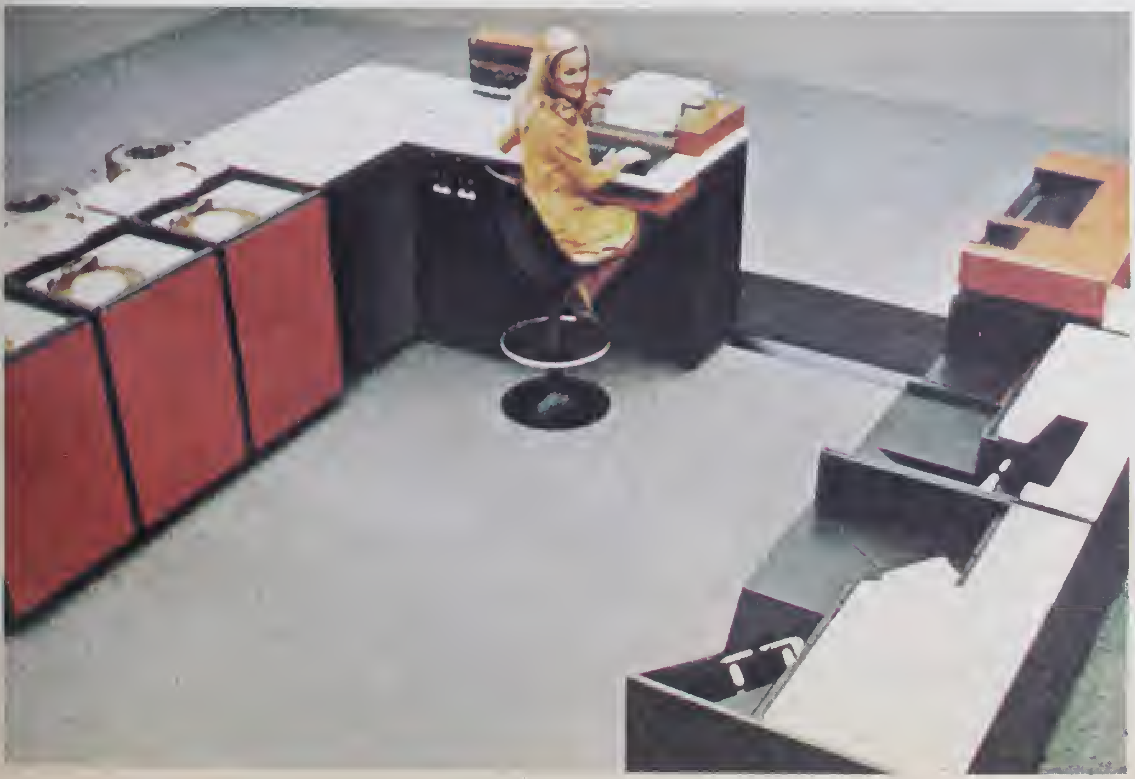

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With Honeywell's GCOS software, these capabilities are not just a promise for the future, but a reality now.

Flexible multidimensional capability

The full range of GCOS capability offers proven multiprogramming, multiprocessing, local and remote batch processing, plus the latest concepts of file system design, communications and time sharing.

The dimensions of batch processing, remote access processing, transaction processing, and time sharing are integrated, thus providing a level of effectiveness beyond that attainable with multiple-system installations.

This merging of processing dimensions in concurrent operation permits the tailoring of the processing mix to individual installation requirements, including dynamic variation throughout the processing day.

Data base management efficiency

The organization, processing, and timely availability of data affecting the state of your business are obviously of first priority. All else—hardware, software, programming languages—supports the need to get at and use such data.

For a fast-growing number of companies today, this means one central information source available to every part of the organization. A common data base lets you define real-world situations and relationships as they occur. It also eliminates redundancies.

Honeywell makes all this possible with a powerful data base management capability. And it provides these benefits without loss of confidentiality or security.

Series 60 offers enhanced capabilities for assembling larger data bases, sharing files, and modifying existing data bases more readily. Honeywell is also playing a leading role in helping to establish industry standards for data base management.

Transaction processing convenience

Transaction processing offers the convenience of online data processing to a wide range of industries such as banking, health care, insurance, brokerage, distribution, government, transportation and manufacturing.

It's a technique that gets the computer involved in mainstream operations as they occur by allowing the processing, filing, or reference of up-to-date information from online communication terminals. The transaction processing terminals are used by sales clerks, bank tellers, factory workers, and others as a regular part of their job.

Honeywell's Series 60 with its GCOS transaction processing capability for larger users makes online transaction processing practical for many companies where before the complexity and cost of such systems were prohibitive.

To simplify system use, only data is entered at the terminal. Terminal users do not enter a program, control cards, or even program control statements. They don't even need to know that computer programs exist. For example, when a bank's customer makes a deposit, the teller immediately enters a transaction describing the deposit. The customer's bank record is updated right at the teller window.

Data communications to unify your business.

The Honeywell Information System is by definition an integral and vital part of a business operation—the channel for timely information flow and processing to aid decision making.

Therefore, Honeywell has placed special emphasis on data communications, developing efficient ways to distribute information throughout your company... including to and from remote locations such as branch offices, warehouses, and factories.

We call this highly refined technique "information networking." It can be a key to giving your business the timely intelligence and response capability needed to react to business changes and opportunities. Information networking can help you improve your customer service, tighten up your inventory, get faster financial information, spot developing business trends faster and more accurately.

In short, information networking can provide the information to improve management effectiveness and increase your company's ability to compete in a very competitive world.

How we help you build this capability

Larger Series 60 systems have been designed to permit the sharing of a common data base, as well as the sharing of peripheral resources, by multiple

processors. This capability means increased flexibility and efficiency in information networking operations.

Our DATANET front-end network processors handle communications without tying up the host central processor. (Honeywell has been an industry leader with this approach.) And our DATANET remote network processor performs chores such as remote job entry, remote batch processing, and line concentration to further improve data handling and reduce data transmission costs.

Our new integrated communications processors offer small- and medium-system users an advanced and powerful entry into data communications at a low cost. They can handle multiple lines and support a wide range of terminals.

Our Network Processing Supervisor (NPS) has established a new industry standard for data communications efficiency and control. NPS software supports not only transaction processing, but also all other modes of remote access: remote batch, time sharing, direct program access, data allocation and distribution, plus store-and-forward message switching.

Advanced NPS features include data and system integrity protection, including error detection/correction, automatic restart/recovery and support of fail-soft operation in a dual configuration. Supervisory control functions monitor events in the network and exert control over these events when necessary. Statistical recording and reporting features provide detailed and summary information reflecting network operation, and customization features meet individual network requirements.

Our terminals provide additional efficiencies in line utilization to further reduce communications costs. This they achieve by means of built-in microprocessor controllers plus highly sophisticated control disciplines. Other advantages provided by these new terminals include connection flexibility and ease of operation.

The model 64/20 offers a new level of performance for medium-scale users.
It includes a compatibility mode for easy transition from Honeywell Series 200/2000 systems.

Major help for key industry specific needs.

The Honeywell Information System includes an extensive library of application software—system designs and modular, precoded packages specific to your industry. Whether installed as supplied or modified prior to use, they help produce quick business results, keeping your development costs down and increasing the return on your investment.

Manufacturing: Honeywell's Factor, a management information system for manufacturers, includes critical applications such as Bill of Materials Processor, Inventory Management, Material Requirements Planning, Production Scheduling and Control, Purchasing Management, Numerical Control, and Management Science techniques. Many of these tools can be efficiently brought together in a data base environment for increased control and productivity.

Education: Honeywell offers application programs in the areas of both administration (SCRIBE) and instruction (EDINET). SCRIBE programs handle tasks such as Attendance Accounting, Grade Reporting, and Class Scheduling. EDINET programs range from Resource Retrieval to Individualized Math Instruction and College Selection. Honeywell time sharing capabilities, running under the control of either GCOS or the Dartmouth Time Sharing System, are popular with both schools and colleges.

Banking: Honeywell supports a full array of banking peripherals and terminals, including extensive MICR capabilities and a high-performance teller terminal. Honeywell banking packages plus data communications and Central Information File (CIF) capabilities can dramatically increase a bank's information processing and customer service capacity.

Distribution: Honeywell's MI·DIS is a system design for total control of all distribution functions, including Order Processing, Inventory Management, Vehicle Scheduling, Sales Analysis and Financial Management.

Health Care: Honeywell is deeply involved in and committed to the health care industry. Capabilities range from Patient Accounting and Hospital Financial Management to Clinical Laboratory, Catheterization Laboratory, and Intrahospital Communications applications.

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Law Restricts Collection, Dissemination

Minn. Government Data Tightly Reined

By Nancy French
Of the CW Staff

ST. PAUL, Minn. – The State of Minnesota has passed into law one of the most comprehensive bills any state has yet enacted to control the collection, security and dissemination of computer-based records and information in state government and local governing bodies within the state.

The legislature is expected to pass another law next year to deal with data banks in use in the private sector, according to Daniel B. Magraw, assistant commissioner of administration here.

The writers of the present law felt it was most important to "get the government house in order first before going after the private sector," he added.

The act covers three general aspects of privacy/security.

First, it assigns responsibility for controlling the collection and use of data to the commissioner of administration; it outlines the rights of the individual who is the subject of the data collected; and it sets penalties for violations of the statute.

Commissioner's Task

Called the "Minnesota Data Security and Privacy Law," the act requires the commissioner to limit data collection to "that necessary for administration and management of programs enacted by the legislature or local governing body."

To insure compliance, the statute requires each individual in charge of a data collection system to inform the commissioner of the nature of all data on individuals collected and stored, and the need for and the intended use of the data.

It further requires that all requests for use of the data by persons other than the original collector be submitted in writing and be entered into the public record.

Permission will then be granted only when required by law or where clearly necessary to the health, safety or welfare of the public, if to do so would be clearly in the interest of the individual involved.

The law provides that summary data – data without accompanying names – may not be used without obtaining a written authorization specifying limitations on intended use.

The law requires that "reasonable and appropriate safeguards" be established to assure the stored data is accurate, complete and current, but leaves up to the commissioner decisions as to what is "reasonable and appropriate." And finally, data on individuals shall be stored "only so long as it is necessary to the administration of authorized programs or as authorized by statute."

Individuals' Rights

Individuals' rights under the law provide that an individual asked to supply personal data shall be informed of the purpose of its intended use and whether or not he may refuse to supply that information. He also shall be informed of any known consequences arising from supplying or refusing to supply the personal data.

In addition, data collected for one purpose can be used for another purpose only after the user notifies the commissioner of his intentions and his purpose.

Any citizen of the state may request the commissioner to inform him whether he is the subject of stored data and, if so, upon his additional request, he shall be informed of the content and meaning of the data or shown the data without charge to him.

Data found to be incorrect must be corrected within 30 days. In addition, the user must attempt to notify past recipients of the inaccurate or incomplete data or notify "the individual in question that the records have been corrected."

The person who willfully violates any provision is guilty of a misdemeanor and any public employee who willfully violates the law may be suspended without pay or discharged after a hearing.

The person who suffers damage as a result of a violation may bring an action against the political subdivision or "other responsible authority" to cover any damages sustained, plus costs and reasonable attorney fees.

In the case of a willful violation, the violator shall, in addition, be liable to exemplary damages of not less than $100 nor more than $1,000 for each violation.

Finally, on or before Dec. 1 of each year, the state commissioner of administration must notify the legislature in writing that these conditions are being fulfilled.

Exempt from the law are intelligence files, maintained by police departments on individuals under surveillance for possible future investigation, and records kept by state health and mental hospitals – the latter on the grounds that for some, knowledge of the contents of these health and mental files would cause more harm than good.

More Intrigue Surrounds 370 Takeover in Oregon

By Robert L. Glass
Special to Computerworld

SALEM, Ore. – The name of Duane Wolf of Oregon's Legislative Fiscal Office (LFO) appears at least twice in an in-depth review of the commandeering of the state of Oregon's Department of Motor Vehicles (DMV) computer [CW, April 24].

Someone called the DMV computer center the afternoon of the takeover and, using Duane Wolf's name, asked that the TSO time-sharing system be left on the IBM 370/158 beyond its normal late afternoon shutdown time.

At 11 p.m., Bill Fellinger of the Oregon Department of Higher Education (ODHE) network planning team logged on the system and took it over to demonstrate that the computer and its operating system were not secure for student usage.

And, during his session on the computer, Fellinger sent a message to the operator's console saying, "This crash is brought to you by ODHE. Tell Duane Wolf – Legislative Fiscal Office."

Wolf, a computing specialist in the LFO office, professes ignorance. "I never met Bill Fellinger before the incident," he said, "except when we were both present at hearings to review an ODHE network computing plan."

The plan was disapproved. Fellinger feels that LFO thwarted the ODHE plan because of partiality to IBM. "No way," Wolf replied. The state Data Processing Commission which reviewed the plan is basically a conservative body, with very little knowledge of data processing, according to Wolf. The ODHE presentation was highly technical, Wolf said, and the application questions which were of more interest to the commission were not covered in ODHE's presentation.

IBM Main Vendor

Wolf elaborated on the question of IBM partiality in the State of Oregon. Statutes require competitive bidding in Oregon, and there are several vendors with equipment installed, he said. But the majority of the large equipment is IBM's, he went on.

There are reasons:

- It is difficult to switch from existing IBM equipment to other vendors because of software conversion costs.
- Other vendors tend not to bid on Oregon contracts.
- IBM is the only company with a support office in Salem.
- The Federal Government, while professing impartiality, requires the capability to run certain kinds of software (e.g., welfare programs) which are available only from IBM.

The support issue is especially important to Oregon officials. A vendor of remote job entry hardware which closed its Salem office six months ago found all of its systems returned shortly afterwards.

Competition is also important, Wolf noted. The State of Oregon, which had a surplus DMV IBM 360/40 it wanted to place in its Human Resources consolidated center two years ago, opened the placement to competition. (Eventually the state won.)

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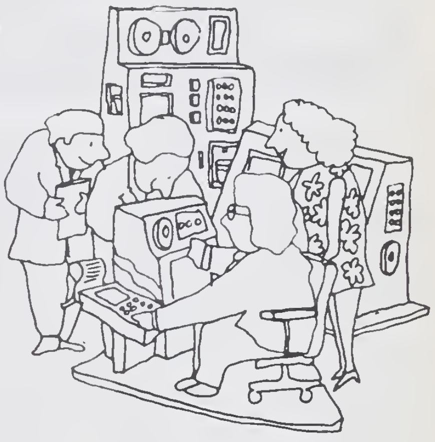

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Implementing Information Privacy

Security Study Distills 10 Action Steps for Executives

By E. Drake Lundell Jr.
Of the CW Staff

SPRINGFIELD, Ill. – "Like all organizational objectives, information privacy cannot be achieved without the commitment of top management to a well-defined plan of action supported by appropriate resources."

Accordingly, the Illinois Secure Automated Facility Environment (Safe) project – which was one of four major sites for an IBM-sponsored study of security in data processing systems [CW, April 24] – has suggested 10 "Action Steps" for use by top-level executives in implementing information privacy in their organizations.

Information privacy, the report noted, "is an interdisciplinary problem. It involves the awareness and understanding of existing and pending legislation, as well as the use of available technological and administrative safeguards.

Educate First

"But, a basic underlayment of any plan is the ability to educate information system managers and users to the need for careful handling of information," the Safe project said.

At the same time, the group noted that security and privacy matters were "organization-dependent," maintaining that its program of Action Steps was aimed at providing a checklist of actions for top managers in order to fulfill their responsibilities in the area.

First, the report said, top managers should review all information system requirements and try to limit the amount of data collected to what is needed – and all new uses of data or plans to collect data should be cleared through the top executives, the report said.

The second step involves the analysis of the confidentiality and criticality of information and then the establishment of guidelines to assess the value of information and the founding of a classification structure for all data.

After these classifications are established, the manager can then assess the vulnerabilities and risks to data within the system including tradeoffs between increased security and increased cost.

The next step in the action program would then be an investigation of the technological safeguards that are available to help make vulnerable areas more secure.

The information executive should be able to tell top managers both the cost and the effectiveness of available technological safeguards, according to the report.

Budget Time

The next action step would be to develop a budget for information privacy, the report said, noting that "the inconvenience costs to users during the implementation of an information system privacy program can be substantial."

Step six in the plan would be to organize for information privacy by assigning specific people or groups the responsibility for various aspects of the problem, including classifying information, researching the technology, executing audits, and investigating security and privacy breaches and enforcing policy and procedures.

Next, there is a need to establish individual accountability, the report said, including developing a security profile for each information system, defining who can read, change or update any information within the system.

The eighth step in the plan calls for implementing the security safeguards, with the report noting that often organizations end up with impressive plans for information privacy, but little real implementation of those plans.

"Senior management must recognize that more than superficial measures are necessary," Safe said. "It takes the timely application of needed resources."

Top managers also must help create a "privacy-conscious environment," the report said, and must condition the people working with such systems to be aware of their responsibilities to keep material private.

"Effective policy execution is dependent on the success of your organization's education program," the report said.

Heightened Awareness

"The objectives of this program must range from heightening the awareness of all employees to the importance of information privacy to defining the technical details of computer security for the information technologist," it added.

The final step in the plan involves periodic auditing of the security procedures and optimizing the performance of the total security system.

"The auditing process can be envisioned as closing the circle of activities that are necessary for a security- and privacy-conscious environment," the report said, noting that audits should cover all of the organization's activities in the privacy and security area.

New Line of 'Microperipherals'

Microprocessors One Step Closer to Business DP Use

By Ronald A. Frank
Of the CW Staff

WOODLAND HILLS, Calif. – The microprocessor has come a step closer to the business DP user with the announcement of a line of "microperipherals" for the computer-on-a-chip systems.

The new microperipheral I/O devices will be hardware- and software-compatible with the microprocessor systems available from such semiconductor firms as Intel and National Semiconductor.

Despite their adaptability to user applications, few users have thus far implemented the microprocessor systems. It is expected that initially the microprocessors operating in end-user environments will be limited to scientific applications and process control.

Like The Mini

But industry experts point out that the minicomputer was utilized in scientific areas long before it became part of the business DP repertoire.

The first microperipheral is a paper tape reader that can interface to the Intel Intellec series of 4-bit and 8-bit microprocessor systems. The paper tape reader will cost $995 and will interface directly with the I/O boards of the Intellec systems. It will be supplied by iCom, Inc., a firm formed to provide a full line of microperipherals, according to a company spokesman.

OEM Until Now

Until now, the systems have been mainly restricted to use by OEM users, many of whom utilized them to develop experimental dedicated applications systems. As an aid to OEM developers, Intel last year introduced a microprocessor system including I/O interface, 16K bytes of Prom, 4K bytes of Ram, chassis, power supply, operator console and software.

This Intellec system costs about $2,395, according to one semiconductor expert, and both 4-bit and 8-bit processors are available. Later National Semiconductor introduced a similar 16-bit system, called Imp, for about $3,800.

Reguirements Differ

But these microprocessor systems exist in a very nonstandard environment. Both hardware and software requirements differ from supplier to supplier and iCom will have to provide specific interfacing and software for each type of system. Because Intel is the largest supplier, the first microperipherals will be compatible with the Intellec series, an iCom spokesman said.

The main difference between these microprocessor systems and the microsystems now available from some minicomputer suppliers is the support provided. The microprocessors originate from semiconductor suppliers who are mainly chip vendors and offer no customer support. On the other hand, the microsystems available from DP vendors usually include a level of hardware and software support in addition to compatible peripherals.

Line Printer On tape

The iCom paper tape reader will operate at 80 char./sec using a photoelectric reader. It will be followed in about "six to 10 weeks" by a high-speed punch and shortly after that a line printer will be introduced.

The first units will include their own power supplies and will interface with the ribbon cables on the Intellec I/O boards. Later, iCom will develop a compatible floppy disk operating system and the available microperipherals will be interfaced to other lines of microprocessor systems, the firm said.

50% Savings

While direct comparisons between the microprocessor systems and existing computers are difficult, one source estimated that with the microperipherals, the new systems would have "slightly less performance than available minicomputers with about a 50% savings." Undoubtedly a significant portion of this savings will have to be allocated to software development and other systems work by the user. Among the most logical applications, multiprocessor systems, communications control, process control and similar dedicated uses will probably be developed, experts believe.

Special Architects

The microprocessor systems may see the emergence of special system architects who will perform this development work, according to Ted Withington of Arthur D. Little. It is expected that the more sophisticated users will be the first to utilize the microprocessor systems at their DP sites, he predicted. Beyond that, microprocessor systems could come into widespread use the same way that minicomputers have evolved.

Meanwhile, iCom calls itself the first microperipherals supplier. And if it has correctly identified a need, other firms will undoubtedly follow. The company is at 21243 Ventura Blvd. 91364.

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Plans for Joint, Open Meetings Under Way

Sharing – That's the Watchword for CPE Groups Now

By **Don Leavitt**
Of the CW Staff

"Anyone who has anything to say or learn about the means of measuring, analyzing, predicting or simulating the performance of a computer system is invited."

Those words came from the chairman of the Computer Performance Evaluation Users Group (CPEUG), talking about the group's meeting in Atlanta later this month, but they easily might have come from the leadership of various other groups concerned with computer performance.

The CPE groups are clearly leading the movement to make DP centers more efficient, and they have abandoned their old ways – and their closed doors – as they have reached toward fuller sharing of experiences. The sharing idea has also prompted one specialty publication to devote part of its space to an exchange of ideas and experiences.

In related interest areas, BBUG, a group once tied to the CPE products of Boole & Babbage, moved away from that vendor a year and a half ago to broaden the scope of its meetings. Now it has gone even further. The BBUG leadership has announced plans for both concurrent and joint meetings with Sigmetrics, an ACM special interest group, when they both meet in Montreal this autumn.

Not quite as adventurous, a Comress users group is planning to meet in Atlanta at the end of May. For a time, it considered shifting its timetable a week in order to dovetail with CPEUG. That idea was dropped, however, since CPEUG won't adjourn until noon on a Thursday, and the Comress group already has a full two-day program planned.

CPEUG's open invitation is particularly impressive in view of the group's start in 1971 as a small meeting of Air Force personnel working with Comet, a government version of Scert, the Comress simulation package.

The group expanded into a government-wide body, especially after the National Bureau of Standards set up Federal Information Processing Standards Task Group 10 to consider CPE problems. CPEUG is currently a direct subsidiary operation of TG 10.

CPE vendors and government contractors have been admitted to CPEUG's semi-annual meetings for several years, but last December's conference in Washington was apparently the first to admit a CPE technician from a completely non-government installation.

There will be a $10 registration fee for the CPEUG meeting, now set for May 21-23, but no membership fee since the organization has no activities except the meetings and no real administrative overhead.

Differences Still Apparent

The BBUG-Sigmetrics venture shows both the interest in sharing experiences among CPE groups and the differences that still exist in approach to the subject. Sigmetrics has issued a formal "call for papers" and a schedule of refereeing and resubmission of accepted papers prior to the late September-early October meeting.

BBUG, on the other hand, has sent out a questionnaire to its members asking what they would like to have in their formal technical sessions, which will be separate from the Sigmetrics formal meetings.

Although face-to-face meetings are useful, times and places are not always convenient, so to bring together users' CPE problems and, hopefully, solutions, the monthly newsletter *EDP Performance Review* has now opened its columns to case studies and related user-provided material.

The newsletter is edited by Philip Howard and published by Applied Computer Research, Suite 298, 8808 N. Central Ave., Phoenix, Ariz. 85020.

CPEUG Chairman William Letendre can be reached at Headquarters, Electronic Systems Division, Hanscom Field, Bedford, Mass., and BBUG President Barry Stevens is with Allied Chemical, P.O. Box 1039-R, Morristown, N.J. 07920.

Chairman of the Sigmetrics technical program for Montreal is John Howard, Department of Computer Sciences, University of Texas, Austin, Texas 78712.

TWA Cardholders Get More Than Plane Trip

By a CW Staff Writer

NORTH HOLLYWOOD, Calif. – People who sign up for TWA Getaway Cards "become eligible for many other offers," according to Bob Mosher, manager of credit marketing for Trans World Airlines, and that is how TWA gets around the touchy issue of selling its computerized mailing list of 500,000 Getaway Card holders.

The actual marketing job for the credit card list is handled by the Market Compilation and Research Bureau (MCRB), a division of Dart Industries, Inc., here.

The only indication cardholders receive that their names will be sold is the quote, TWA Getaway Card holders "become eligible for many other offers."

In its nationally distributed sales literature, Dart characterized TWA cardholders as "people with better incomes, people on the move" . . . members of "the most dynamic segment of the American population."

Dart literature suggests that companies selling land investment, sporting goods, clothing, records/tapes, books and magazines can sell successfully to TWA travelers.

Under "general conditions for use of this list," MCRB specified that as far as "ownership of names addressed" is concerned, all lists furnished by MCRB are released on a rental basis for one-time use only and may not be duplicated.

Its only restriction on those companies which wish to pack the mailboxes of TWA cardholders is as follows: "MCRB reserves the right to request a sample mailing piece or proposed copy before agreeing to release any of its lists. All first-time orders must be accompanied by a sample of the mailing piece."

MCRB explained, however, that these controls are required "to avoid conflicts in scheduling and to allow screening of material that may be misleading or in poor taste . . ."

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Editorial

Right Road, Wrong Direction

There appears to be some movement under way in the U.S. Government-IBM antitrust case, but it is in the wrong direction.

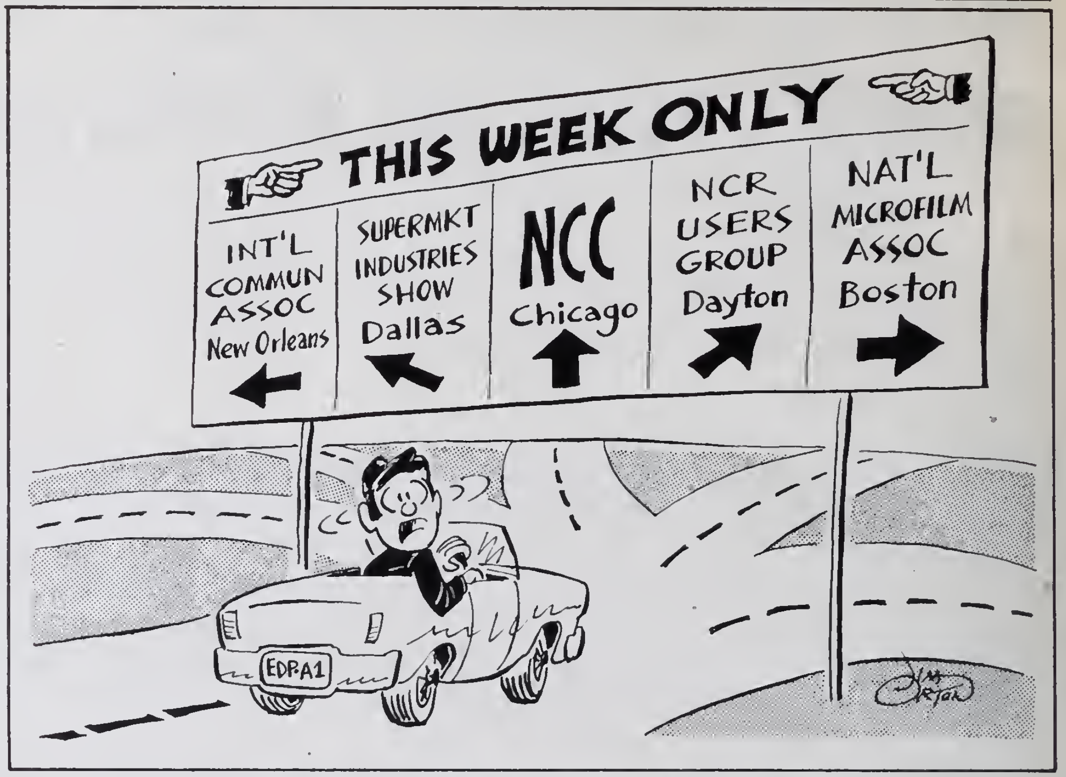
Several news items recently have pointed to problems in the case that might serve to delay its scheduled start on Oct. 7 of this year – a delay that should be intolerable.

The case will be almost six years old at the proposed trial date – certainly enough time for the lawyers and parties on both sides to have narrowed the issues in the case and completed the pretrial groundwork.

Judge David N. Edelstein has taken a forthright position on the issue by indicating he will "resist" any move for a further delay – a stand that is to be congratulated.

Both sides are to blame for the excessively long time the case has been under consideration and it is now time for both to get down to the hard work in the months ahead so there will be no future delay, since any delay causes havoc with users' purchasing plans and the economic state of the industry.

This most important legal issue must be resolved as early as possible.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EDPA1

'I Thought I Left the Big Decisions Back at the Shop'

Letters to the Editor

Lack of Right Port Can Be Remedied

The article on IBM front ends [CW, March 13] cites Dr. David Mills' proposition that the vendor is uncooperative in facilitating connection of better terminals. That is, terminals with better performance supplied by competing vendors.

While this has been our experience also, the specific example given, lack of an RFP for a 300 bit/sec 2701 port, can be remedied as follows:

- Install standard 2701 telegraph II adapter.
- Install RPQ F 26674 VER049 (AT&T Model 37 TTY interface).
- Replace card 5807058 (9.6 KHZ oscillator) at location K2 with card 5801784 (19.2 KHZ oscillator).

While this is an unsupported modification, we used it sucessfully when we had a 2701 to interface Datacom 300 (Terminet 300) terminals; presumably the remedy for 2702 and 2703 ports is analogous.

William L. Birney
Technical Services Supervisor
British Columbia Telephone Co.
Vancouver, Canada

Hats Off to OCR User With Working System

Re "OCR (A Bit Frightening) [CW, April 24]:

The title really doesn't agree with the content of the article. Congratulations to the Blue Cross/Blue Shield team are in order by another OCR user for a potential savings of $200,000 plus in a two-year period via OCR.

We have been involved in OCR for approximately 10 years and have approximately 275 varied OCR applications in operation at our Delran, N.J., data center. Our EDP facility services 25 subsidiaries of the corporation and a number of customers outside the corporation, all of which utilize our OCR capabilities in one fashion or another. The savings realized by our firm over the past 10 years are immeasurable. Yes, we too have made mistakes, but so has everyone involved in various phases of data processing.

Existing and potential OCR users should be members of the OCR Users Association which is a fine organization oriented toward improving the art of OCR. The next Ocrua conference will be held in San Francisco on July 9-12, where user ideas will be exchanged by all members in attendance. The last conference, held in December 1973, had over 200 attendees.

W.A. Dwyer
Mgr. EDP Services
Macmillan, Inc.
Delran, N.J.

Apathy Understandable

The recent survey by Alan Taylor on dirty files was very interesting because, like all DP managers, I believe we strive to keep our data files "clean." In today's world of various shortages, it is important to cut the "chaff from the wheat." I have attempted to do so with the various "junk mail" I receive.

Recently I sent a letter to the American Management Association (with mailing labels attached), requesting it to reduce my mailings from three to one. Their reply states: "Unfortunately, at this point in time, the elimination of duplication among business lists is just not economically feasible." Now I can understand the apathy many users have of data processing.

Dennis P. Full
Manager of Information Services
Lenox Candles, Inc.
Oshkosh, Wis.

Throw Out Bad Tickets

I was startled by the story in the April 17 issue about the disappearing ink on the carbon copy of parking tickets used in the District of Columbia. You will recall that the tickets were printed on a rubbery paper that was very strong – but the ink used to print the serial number and the carbon used when filling in the variable information tended to rub off.

The article concluded that the next batch of tickets will be different – but it didn't indicate that anyone had the sense to throw out the entire batch on hand and replace them immediately.

If the information in the article is correct that one million tickets cost $30,000 or 3 cents apiece, then the additional work to handle tickets with no information on them would have to be less than 3 cents apiece to warrant using up the present supply rather than immediately replacing them.

At $2 an hour minimum wage, this means that less than one minute extra per ticket must be spent. The article implied that much more time was being spent – and, therefore, the prudent decision would be to reorder immediately and throw out the defective tickets as an economy.

Robert Kahn
Lafayette, Calif.

Cashless Society Ideal

In regard to the article on home terminals [CW, April 24], I feel it is only a matter of time before the IRS realizes that a cashless society with the government responsible for all transfers, i.e., the government runs the computer, is the ideal way for collecting taxes and controlling money crimes.

Who's to say if this system would be good or not? At least we would not have to compute income tax. It would be built into the program and there could be no cheating. We wouldn't be able to pad expense accounts either.

Banks would still have their present functions. It does seem that such a system would stymie crimes involving transfer of money or funds. How could one pay for drugs? How could one gamble without it being known? What good would it be to hold up a bank or a person?

The economies sayers would be pleased as the systems would give them a running total of the GNP and other factors.

Walter Meuller
Indianapolis, Ind.

Addresses Needed

With regard to the special report on data base management systems [CW, Feb. 27], I am interested in communicating with vendors listed in an article by Harold Uhrbach entitled "Dictionary Links Data to Uses." However, I have been unsuccessful in finding some of their addresses. Specifically, these are: Arthur Anderson; Eastern Air Lines; Logica, Inc.; and Software Unlimited.

Steve Sabin
Columbia, S.C.

As follows: Arthur Andersen, 1345 Avenue of the Americas, New York, N.Y. 10019 – Lexicon; Eastern Airlines, International Airport, Miami, Fla. 33148 – Data Base Directory (DBD); IBM, 1000 Westchester Ave., White Plains, N.Y. 10604 – Data Dictionary/Directory (DD/DS); Logica, Inc., 931 S. Douglas St., El Segundo, Calif. 90245 – Logic Metadata System (LMS); Software Unlimited, 63-84 Saunders St., Rego Park, N.Y. 11374 – Commandd; Synergetics Inc., 1 Garfield Circle, Burlington, Mass. 01803 – The Data Catalogue; University Computing Co., Dallas, Texas – UCC – Ten.

Arpa Net Not a Toy

I do not completely understand the intent of your recent editorial [CW, April 17]. However, if you by your editorial mean to imply that Arpanet is a useless "toy" or that a minicomputer is not capable of *far better* cost/performance ratios than your "respectable" 370/145, then, you, sir, are very, very wrong.

Gordon E. Peterson II
Champaign, Ill.

The Arpanet is an intentional and shameful ripoff of the taxpayer by a military-academic clique, a clique that should be impeached. It carries no useful traffic. It costs the earth. And as a demonstration, well, the intercontinental S.I.T.A. network of disparate computers and different-bandwidth links was a working reality before Larry Roberts passed out the first boodle to his eager pals. HG

He Has No Patience

As I read Herb Grosch's editorials in *Computerworld*, I often suspect he has something to say. Unfortunately, he has a unique ability for obscuring the message.

The editorials seem to encircle the subject with so much gobbledygook, without getting to the point. I don't have the time to reread the writing three or four times to try and figure out what he is trying to say, nor do I have the patience to try and read between the lines.

Some people may think it is cute; I think it is foolish. If Grosch wants to have an impact and get his point across, may I suggest that he alter his writing style to be more direct. At least he should have the courtesy to state his point explicitly. Perhaps then we will understand him better.

Gordon C. Everest
Minneapolis, Minn.

Good Riddance to CPP

The April 17 editorial praises the Computer Professionals for Peace organization . . .

It is doubtful that the CPP as an organization has made any significant, positive contribution to the computing field or the nation's well-being. Praise, rather, the death of CPP; it has come to the end all fascist-minded groups deserve.

P. Chinitz
Norristown, Pa.

"When I use a word," Humpty Dumpty said, in rather a scornful tone, "it means just what I choose it to mean – neither more nor less." HG

Computerworld welcomes comments from its readers. Preference will be given to letters of 150 words or less. Letters should be addressed to: Editor, Computerworld, 797 Washington St., Newton, Mass. 02160.

By What Standards Do We Judge Them?

At Last...a Few Good Words on Private DP Schools!

By Joseph T. Rigo

Special to Computerworld

I would like to put in a few good words for private EDP schools.

These schools are constantly under attack. Some for good reason. Some for reasons not so good.

I think we can agree on a few things:

- They do not appeal to the better class of people. They simply do not attract students who are able to win full tuition scholarships to major in computer science at Harvard, MIT or Stanford.
- They generally do not turn out our most distinguished computer professionals. Some of their graduates actually have to settle for taking jobs as (shudder!) computer operators.
- They accept students who can't do the work, and who have high dropout rates. Would anyone like to try naming a school where this isn't true?
- They have been around for a while. Maybe it's time to consider the possibility that they really are filling an honest role in our great scheme.

The professional academics have been firing potshots at the private schools for years. God forbid that anyone should get a job in computing without spending at least two years sleeping through endless lectures on Boolean algebra.

Now the public press is entering the act. As reported in *Computerworld*, the *Boston Globe* had one of its reporters take the entrance exam for a private EDP school.

The reporter deliberately messed up several of his answers, scoring only 54% on the exam. (In a CW cartoon one week later, this was reduced to 32%.)

Despite the score, a school salesman told the reporter, "I'm sure you can do the work here." This quote was cited as evidence of the school's evil intentions.

Now the *Globe*, despite its dullness, is still able to attract reporters who can read and write. They tend to be college graduates, white, middle class and articulate.

In fact, the salesman was probably right. If he had been on his job more than two weeks, he knew who missed questions and which ones they missed. The reporter – despite his egotism – surely did not fit the pattern and, in fact, probably would have been able to figure out how to mount a tape or disk.

The same story contains numerous quotes from a former employee. He is not identified. Nor are we told why he left the school. Did he quit? Was he fired? Was he caught selling phony CDP credentials? Who knows? We merely get to read his colorful quotations.

Impartial Appraisal?

Now it may be that these schools are as bad as their critics charge. I suggest, however, that we have not done a very good job of looking at them impartially.

Viewpoint

Let's face it. These schools are for people who, for one reason or another, can't get into anything better. They are for the ghetto kid who just got out of the Army and is looking for a way to support a family.

He's ambitious. He wants to make an honest living, but he barely speaks English. He doesn't see himself fitting in too well in the hallowed halls of ivy. Or in the hairdressers' course at his neighborhood community college.

Like the rest of us, he has heard that computers are a good thing, and he wants a seat on the gravy train. His only chance is one of the private schools. But which one?

If he meets our standards for enlightenment, he will look for advice. He may even get a copy of the booklet, "Facts on Computer Careers," published by the Council of Better Business Bureaus and the American Federation of Information Processing Societies.

This booklet contains, among other things, three pages of good advice for prospective students at private EDP schools. (Interestingly, there is not a word to help those who are trying to figure out whether NYU offers a better curriculum than Columbia.)

For example, the booklet tells our ghetto kids to "check the qualifications of the school's instructors. What are their educational backgrounds and experience?"

"Ideally," it says, "instructors should have practical business experience in the computing field as well as training in teaching." Amen. The University of Michigan faculty should meet this criteria!

"Is the institution aware of the guidelines prepared for EDP schools by the Association for Computing Machinery (ACM) and the Data Processing Management Association (DPMA)? If so, what steps, if any, has it taken to follow these guides?"

Cast the First Stone

Now I ask you, can you picture your 17-year-old son asking your friendly neighborhood dean of computer science whether his school follows the DPMA curriculum guidelines?

And your kid can probably speak English, yet! Our guy only wants to learn how to mount tapes.

"Take at least one comprehensive examination . . . Make certain that it is graded in a valid, impartial fashion."

Again, which of us knows whether our college entrance exam or whatever was graded in a valid impartial fashion?

Come off it, guys! We ought to be past the point when our primary goal was to keep the lower classes in their place.

If we want to complain about private EDP schools, do so. But let's not invent artificial standards that don't apply anywhere else.

There are people who would be good additions to our profession. Even as operators. But they are scared off by our well-intentioned (but stupid) good advice.

The private EDP schools seem to have a legitimate role to play in our profession. So does UCLA. Both turn out people who would be better off on welfare.

What else is new?

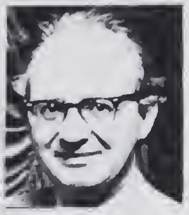
Joseph T. Rigo is ombudsman for NYC/ACM.

Input on DOS Support Service Suggests Revolution

The Taylor Report

By

Alan Taylor, CDP



IBM 360 users apparently like the idea of DOS support which is now being provided by the Computer Lessors Association in fact, they want the CLA program expanded.

The plan started early this year to fill the vacuum left by IBM's withdrawal of DOS support. At the time a Taylor Report on the development of the CLA plan hailed it as an indication of a user revolution and this was followed by reader requests that the scope of the service be enlarged to include non-CLA member 360 sites.

When these requests were passed on to CLA, readers were invited to provide input for CLA discussion - and a special questionnaire was distributed. Here are the results – and some commentary - which is being provided for CLA.

"I think, as an industry," John Jorgensen writes, "recognizing the miracle of perpetual hardware life which IBM has provided in 360s, we must be ever mindful of those pioneers who purchase computer equipment . . . Next time around, we who like to feel that the 360 is immortal may well have to purchase or go to the 370s."

Jorgensen, general manager of Computerized Business Systems, Moberly, Mo., runs a 360/50 which he says is humming along very obediently under the supervision of DOS. In his verbalization of the fundamental problem behind the IBM actions he perhaps showed the user position better than any other response. He seems to have quite a way with words – for instance, consider his comments on how they came to install a 360:

"We executed our divorce from IBM during February 1974. Ringing loudly in my ears is the warning to our board of directors by IBM that 'DOS is dead' and that therefore the 360 has gangrene."

Jorgensen is not alone, however, in objecting to the current anti-360 campaign by IBM.

David Harp objects to IBM's claim that the 360 is dead because IBM has turned its back on DOS customers through the discontinuation of DOS education and support.

Pressing his objection to its logical conclusion, Harp says he wholeheartedly supports the efforts of CLA to fill this void, and sends best wishes for their success and continuance, even though the replacement at the New Castle County Data Center in Wilmington, Del., may well be a 370!

Even Lobbying!

The level of support for the CLA venture went even further than just good wishes, however. Chester L. Adkins, a computer programming manager in St. Paul, Minn., tells me he has actively started beating the bushes to raise support for the DOS service. He has asked all 360 lessees in the Twin Cities to lobby their lessors for continued support – and enhancement of the service.

There is a good technical advantage in doing so, he believes, because the more they evaluate the comparative performance of the 360s/370s the more they lean toward the 360 as the most economical available system. Based on this, Adkins is volunteering both time as well as opinions to push matters forward.

Of all the responses Adkins shows the most knowledge of some of the submerged problems involved in the operation – and even has some recommendations as how to solve them. For instance, he points out that the problem of maintenance vs. enhancements is not as simple as is often suggested.

Big Changes From Small Ones

Currently the standard answer to this is that the service should supply at most only "minor enhancements." This is to protect independent software suppliers, such as Software Design, Computer Software Co., etc. However, as Adkins points out, while this is reasonable on the surface, such a decision simply does not face up to technical reality. As he points out, it is very difficult to separate enhancement and maintenance matters – and some small coding changes, such as the insertion of an Isam core index, can make a major production change.

Having faced the technical reality, Adkins has a two-step solution:

- Separate the CLA decision to continue and open up the service – which Adkins feels must be done – from the enhancement vs. maintenance issue.
- Accept the fact that "discretion" must be exercised in the development of enhancements – and that arguments will therefore be inevitable.

$25/Call Payment Approved

Dealing with the details of the responses (see box) all showed willingness to pay for call services, with most putting the figure at $25 – although higher charges had supporters also.

Gordon Moulton, DP director at South Alabama University, and Bob Hendrickson of Hendrickson, Williams and Associates in Santa Ana, Calif., were among those calling for a $60/call fee.

Prepayment plans, however, got the lowest ranking – 2%. It seems that most DOS users find that DOS is strong enough not to need the insurance-type support policy, even though it does need occasional on-call support.

Not a single objection to the extension of the service to non-CLA members was received – making this the first time that a Taylor Report questionnaire has returned a 100% one-way response. That in itself seems to be a significant justification of the extension of the CLA service.

But, really, the news for me went beyond the input for CLA. True, it confirmed my opinion that the 1974 emergence of CLA into the user environment will be revolutionary in its impacts – but it also suggested another 1974 user-environment revolution. It appears that 1974 marks the year when the user is at last facing up to the truth of the IBM 1965 rationale for raising prices on 360 equipment – that, in truth, computers can be practically immortal. And even though the software may make them temporarily gangrenous, some good programming and tender loving care can quickly cure them.

And that's the first 1974 May user-revolution

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Questionnaire Results

1. CLA should respond positively to outside requests (100%).
2. CLA members should protect their own interests by:
   Charging non-CLA users more (70%).
   Making CLA membership more attractive (10%).
   Don't care (20%).
3. Per-call values of DOS support services are:
   $25 (50%)
   $40 (20%)
   $10 (15%)
   $60 (10%)
4. Permanent values in percentage of rental are:
   2% (80%)
   4% (20%)

The figures show the results of the first analysis of answers received. They are being forwarded to the CLA to help with making the decision regarding outside interests.

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'LEASING SPECIALISTS'

DP Function Doesn't Exist in Vacuum – Part II

Plans Must Be Developed Concurrently

By Louis Fried

Special to Computerworld

In order to be relevant, the hardware, software and staffing plans must be developed concurrently. Within some limits a regular perusal of currently published materials provides adequate indicators to the general trends of changes to be expected in the hardware and software fields for up to five years into the future.

Another indicator is simple business economics. We can expect that any computer manufacturer will want to obtain sufficient return on his investment in a new product line before making it comparatively obsolete with a new model. For example, we know that the IBM 360 had a product life of about eight years. We can assume some changes in technology but we can reasonably expect the 370 to have a product life of at least five years.

Given various software options and a staffing level consistent with the level of expense authorized by top management, a schedule should be developed for implementing the applications in their order of priority. In addition to indicating manpower and software requirements, this schedule should indicate the computer time necessary for development and operation of the proposed systems and any additional hardware that may be necessary to contain the data base or accommodate the additional time requirements. This schedule becomes the basis for the hardware plan.

Parallel Planning

The software plan, developed concurrently with the hardware and staffing plan, will influence and be influenced by both of these.

Viewpoint

The characteristics of the operating system will influence the hardware selection and influence the training and caliber of the staff required for the installation. Some operating systems may require the purchase of significant numbers of auxiliary software packages. In addition, an efficient operating system may lower the requirement for hardware.

The operating system must be selected with a view toward the ultimate needs of the systems plan. In order to meet the objectives of the systems plan, a conversion of operating systems may be required. Such a conversion will have a major impact on staffing and must be considered in the schedule of system implementation and hardware delivery.

The systems plan must also be evaluated for the potential use of packaged software.

Documentation and technical standards must be reviewed and plans developed for their maintenance and enhancement. A change of operating systems, for example, will require major changes in the standards of the installation.

The software plan contributes additional cost to the total budget in terms of the anticipated price of software, the anticipated cost of conversions and estimated amounts for upgrading and maintaining documentation and technical standards.

A staffing plan should be relatively specific for 18 months into the future and generalized beyond that for at least another 12 months.

In allocating time for personnel one would normally expect to budget for maintenance projects, enhancement projects, feasibility studies and new system projects. This time, which may be considered "chargeable" or productive time, should not be budgeted beyond 70% of the available time of the personnel dedicated to this work. This will allow for the use of personnel time in training, vacations, sick leave, organization meetings, etc.

In addition to the above, time should be allocated for such efforts as do not directly result in productive work for the user. For example, budgets should be established for the maintenance of systems software, instruction and training, anticipated loss due to turnover, conversion efforts and research and planning.

The Control Plan

The control plan consists of the policies, procedures and techniques necessary to provide DP management and general management with the tools necessary to control the direction and monitor the performance of the DP organization.

An essential ingredient for the monitoring of performance is a system permitting the charge-out of project development and operation cost to the users. This system should preferably be structured to include overhead factors that result in the recovery of all costs of the DP organization. Guidelines must be established for the control of project cost and time on a regular basis.

Louis Fried is vice-president for management services at Pioneer National Title Insurance.

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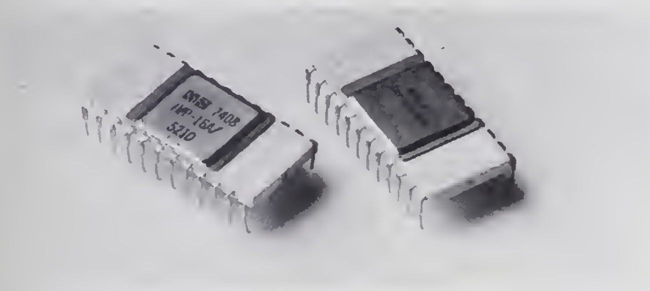

Chip #1, the one that does the work, is a Register and Arithmetic Logic Unit (RALU). And chip #2, the one that tells the RALUs what to do, is a Control and Read-Only Memory (CROM).

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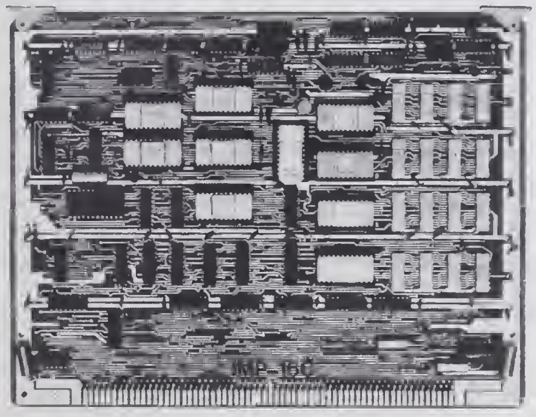

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He Got to the Top but DP Wasn't Fun Anymore

By Miles Benson

Special to Computerworld

The Sociology of Computing

The manager stood at the window of his office and watched the river flowing by several stories below. It was polluted, of course – the waste materials from his company, American Steel and Foundry, had seen to that.

Paul S. had earned the right to stand at his window and look out. He had joined the company as a programmer, full of fire and energy, convinced that computing was the wave of the future and that he was surfing in on its crest. Coding was exciting, then . . . and so was flowcharting . . . and so was checkout . . . and so was . . .

Where Did It Go?

Something had gone wrong, somewhere along the way. The excitement had died, the fire had gone out, the energy had been channeled into other things.

That was it – channeled. Somewhere along the line, Paul S. and his computing free spirit had been channeled, like the river below, into areas where he hadn't really wanted to go.

Why was he standing in this office, looking out this window? It wasn't ever what he'd wanted. Making budgets, and ranking employees, and assigning tasks that he would rather do himself had never been what he'd wanted. He'd give his eye teeth to be on the team trying out structured programming concepts on the new data base management system, instead of being here, four floors and three levels of management above it all.

And polluted. Again, like the river below. Getting to this office and this window had been a series of compromises for Paul S., each one knocking a little chip off his integrity, until the person he was now was not one he really liked very well. Get the job done. Never mind the consequences.

He thought back over those little chips of integrity.

He had shed his first chip not too long after he had joined American, in the computing methods organization. He and a coworker had shared responsibility for maintaining the linkage editor function of the operating system. They seemed to be competing for a lead spot. Paul had kept the pressure on his coworker, pointing out his flaws, redoing his work, telling management how ineffective it was. Subtly. There was just enough truth in it, just barely enough, to make it stick. Paul got the job.

The second chip came off when, as a methods lead, he had participated on a minicomputer selection team. There had been a clearcut winner, a computer that turned handsprings over its competitors for American's application. But management had a preconceived notion as to who should be the winner. And Paul, seeing the handwriting on the wall, had made the very practical decision to switch his vote and support management.

He was up another level of supervision when the third chip came off. Paul had a job opening to fill. A good friend of his, a computing specialist with qualifications that wouldn't quit, needed the job. He was on the quiet side, this friend, and the other logical candidate for the job was aggressive. Not as well qualified, but aggressive.

An aggressive person on the staff might give Paul a short-term boost which could push him another rung up the corporate ladder, before the technical lack became apparent. Paul did not hire his friend. And he did move up another notch.

There had been little chips along the way, too. American had a bad case of a communicable corporate disease. Parochialism consumes a great deal of energy from its victims. If the technology organizations won't help you with the hardware scheduling problem, write a memo saying so.

If an accounts receivable user admits an error in input data, document it. If controls let some reports slip through erroneously that either they or you should have caught, be sure *their* error is on record. If you make a decision – and avoid making one as long as you can – get everyone in the company to sign in agreement. Document. Record. Protect. Paul S. caught the disease, and made it into a game, and played the game very well.

And here he was. A success. The Great American Dream come true. Paul S. had parlayed his computing background into a good corporate position.

Channeled and polluted. Computing wasn't really very much fun any more.

Letters to the Editor

Scoring Mental Heath

I would like to offer a few comments and observations with regard to the April 10 article by Edie Holmes on psychological test evaluation.

In the late 1950s the Mayo Clinic established the first automated scoring and computerized interpretation system for the MMPI. This precipitated much research and development with regard to the MMPI. In the late 1960s the Roche Psychiatric Service Institute was established specifically to score and interpret the MMPI. Its endeavors have been so successful that as of 1973 we have accumulated in excess of a half-million MMPI cases on our computerized files.

All patient records are completely anonymous to the Roche Psychiatric Service Institute. The institute is dedicated to research and development of its computerized interpretation system.

To my knowledge there are approximately a half-dozen or more such services being offered throughout the country. Within the psychiatric field they have received much acclaim.

If any readers are interested in comparative studies among all of the automated services, they should refer to the *MMPI Handbook* by Dahlstrom, Welsh and Dahlstrom.

Dolores J. Stammer
Program Manager
Roche Psychiatric Service Institute
Nutley, N.J.

Muddled Thoughts?

I found Herb Grosch's letter to James H. Binger of Honeywell [CW, April 24] a truly asinine piece of rubbish. Carrying these muddled thoughts to conclusion, we should have zero defense and no means to keep our country and other friendly countries free from violent takeover. Really, Mr. Grosch, you should resign your job and move to a "flower people" commune where you can think nice thoughts about other people's navels.

Hal Womersley
Jacksonville, Fla.

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Dutch Aim for Computer Appreciation...

Education Around the World

UTRECHT, The Netherlands – "The formative value of learning how to work with a computer cannot be underestimated. It cultivates a strong operational, algorithmical and organizational attitude toward problem solving," according to G. Vonk.

Vonk, who is with the Institute for Development of Mathematics Education here, was discussing the aims of a computer appreciation course which is being implemented in secondary Dutch schools.

"Pupils often manage to dodge an issue with a show of verbosity, which in actual fact is a cover for a lack of insight into the issue," he said.

"With computers this tactic would not get them very far. They would be required to know precisely what they were talking about as well as the order in which to present the case.

"In short, they would have to make their knowledge operational," Vonk stated.

Vonk expressed the opinion that such topics as binary systems, flip flops, magnetic core memory, and other hardware and software should not share the level of importance attached to applications in a computer appreciation course.

"One should always take care to avoid overemphasizing programming, or even worse, to allow the subject to degenerate into a programming course," Vonk stated.

"A great deal of attention should be given to common computer applications which are interesting and which demonstrate the importance of using a computer," he said. "In dealing with these broader applications, the all-important notion of a computer model as being a close approximation to a real situation should be made apparent."

...While French Seek Awareness

PARIS – A program for the introduction of informatics into secondary education in French schools has been launched as a result of the 1970 Sevres seminar, organized by the Organization for Economic Cooperation and Development (OECD).

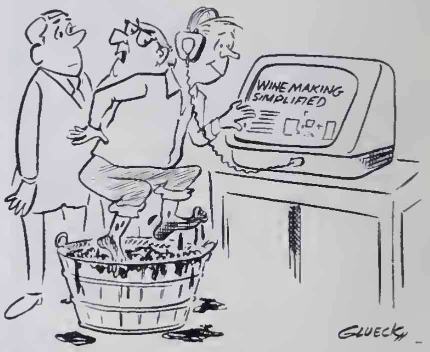
This program consists, for the most part, of clubs open to students on a voluntary basis.

The objective of this approach is to produce an awareness of the methods of information science not by introducing informatics as a new educational discipline, but rather by applying it across the disciplines already taught.

To date, the National Ministry of Education has installed minicomputers in four high schools, operating in a time-sharing mode.

A specially designed programming language – LSE (Language Symbolique d'Enseignment) has been made available, according to W. Mercouroff of the ministry. It has the advantage of simple syntax with the key words in French, he said.

The continuing plan of action, controlled by the National Pedagogical Committee, calls for the methodology of informatics to be assimilated into the teaching of a number of disciplines, including literature and languages, natural science, mathematics, industrial technology and physical science and the humanities.



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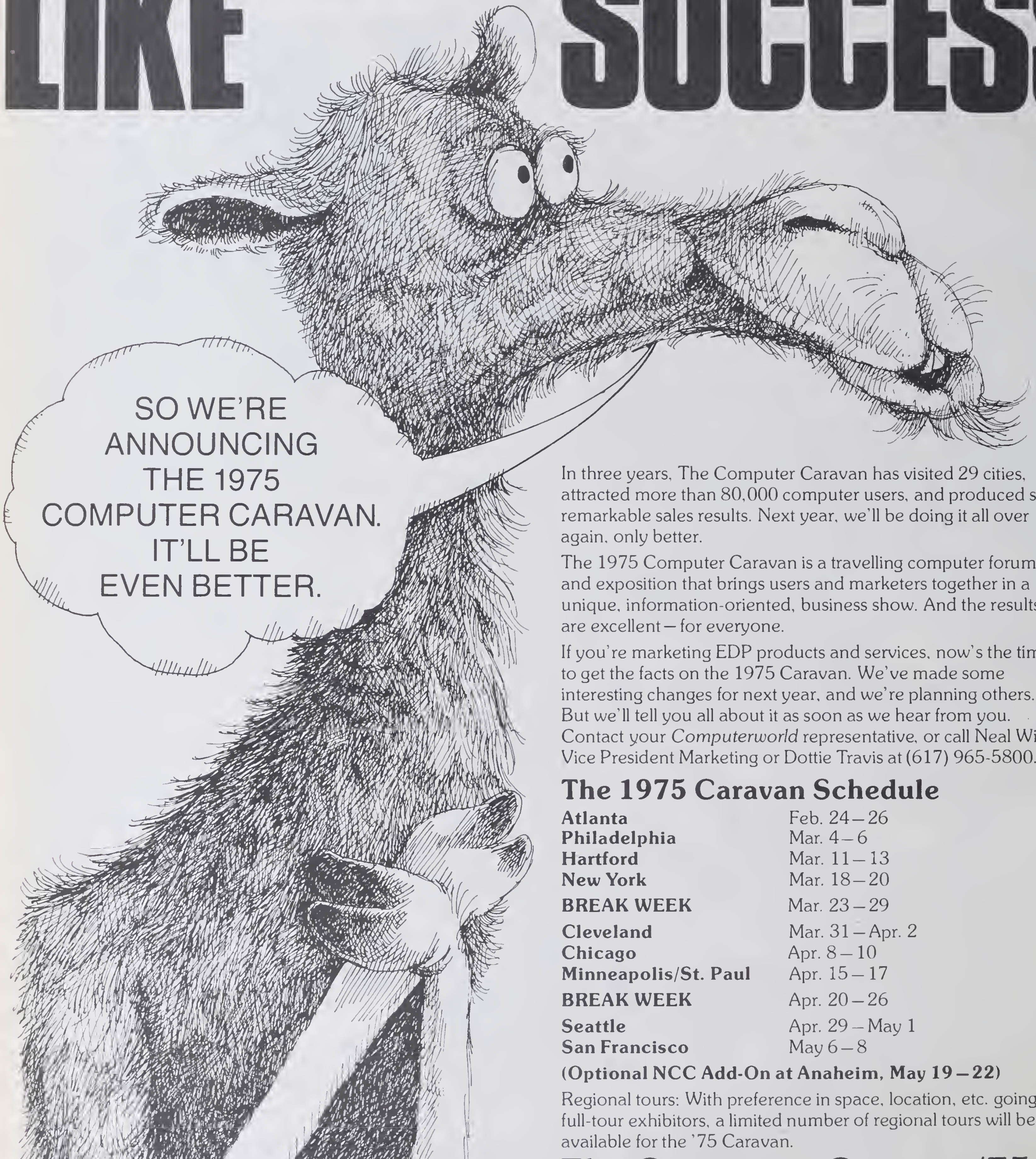
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Hartford	Mar. 11 – 13
New York	Mar. 18 – 20
BREAK WEEK	Mar. 23 – 29
Cleveland	Mar. 31 – Apr. 2
Chicago	Apr. 8 – 10
Minneapolis/St. Paul	Apr. 15 – 17
BREAK WEEK	Apr. 20 – 26
Seattle	Apr. 29 – May 1
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Datalaere – Danish May Change Name But Subject Is DP

COPENHAGEN – Denmark is adding a new discipline to its existing school subjects – datalaere.

Basically, the discipline is computer science, but the new name was chosen because of an unwillingness to connect the new subject with special data processing routines and with special sorts of equipment, according to Stig Obel, assistant director of education, Direktoratet for Gymnasieskolerne og Hojere Forberedelseseksamen.

"The school discipline consists of different subdisciplines such as the data concept methods of problem solving, algorithms and algorithmisation, and communication of algorithms (including some programming)," Obel said. "Datalaere as an educational subject focuses on communication and problem solving."

Danish educators see no reason why datalaere should not be part of the curriculum in compulsory school – grades one through nine – and plan to integrate it in mathematics courses. The formalism in the theory of sets, groups and logic is naturally extended into the datalaere area, Obel said.

Education Around the World

Teaches Decision-Making

Datalaere, Obel feels, supports the main aims of compulsory schooling since it gives the majority of students an opportunity to show creativity and imagination and allows them to make individual decisions.

In addition, the solution of problems in datalaere will often demand cooperation within a group, preparing the students to enter society.

The students should, through datalaere, be able to recognize different forms of data carriers, data representation and data structures from everyday life, Obel said. They should also be able to program and run small examples on a computer in a simple language, describe the main phases in data processing, the main components in a computer and the main uses of data processing.

Another main aim of compulsory school is to make students ready to take their places in society, Obel said. "The use of the computer is playing an increasing role, and it is therefore desirable that all pupils leaving the school system should have some knowledge of this aspect of our society," he concluded.

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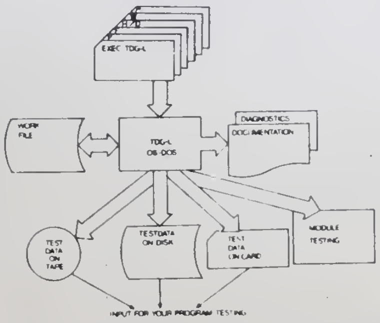

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Scots Emphasize Batch Packages

GLASGOW – While on-line facilities are rare in Scottish schools, every secondary school pupil in Scotland has access to batch computer facilities. And that is one reason why educators here have concentrated on developing batch packages for secondary subjects.

Cost is also a factor, according to R.M. Murdoch, lecturer in computer education, Jordanhill College. But, he said, Scottish educators have also seen problems in using on-line systems facilities with even medium-sized classes.

Packages as Murdoch refers to them consist of a program or series of programs dealing with some aspect of a subject, and requiring no computer knowledge on the part of the user.

Some highly successful packages developed in the past two years have been in the area of biology, the educator said.

Education Around the World

A good package "must in some way extend the facilities which are available to teachers, e.g., it must not merely simulate some situation which could be studied adequately in the laboratory," Murdoch said.

Since many biology experiments and concepts are beyond the scope of the school laboratory, the computer package can play an important role in education, Murdoch opined.

For example, both statistical (calculative) and simulation packages have been developed in biology.

"Our [statistical] packages deal with the statistics required by the biology student and do so in a simple way," Murdoch said, contrasting them with vendor statistical packages which "do more than is required at school level."

An example of a package currently being developed is one dealing with students, considering age, height, hair color, etc. The package, he said, will enable a school to share data collected in each of the other schools using it.

It Had No Business 'Cents'

HARRISON COUNTY, Ind. – When the new administrator of the county hospital recently looked at his operating figures printed out by his bookkeeping computer, he was shocked to learn the hospital had lost over $90,000 in the few weeks he'd been on the job.

However, administrator John Vie found out after some investigation that the computer wasn't programmed for the business side of the hospital's operation. It just took care of the census figures.

As a result, when Vie used business figures, they would not compute and the machine would spew out ridiculous amounts of numbers.

The program has since been changed, Vie commented.

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Building an Entry System Under DOS/VS – Part II

28 Terminals, CICS/Dbomp Base Bring Orders On-Line

By Don Leavitt
Of the CW Staff

SPRINGFIELD, Mass. – To get its Dbomp/CICS-based order entry system running effectively on-line to all concerned user departments, Milton Bradley Co. (MB) tied a total of 28 local and remote IBM 3270 CRT terminals to a 370/145 with 393K bytes of main memory and six 3330 disk drives.

The terminals are distributed throughout the toy maker's main manufacturing facility in nearby East Longmeadow, Mass., and accounting and control sections within the company's headquarters here. Though most are keyboard and CRT only, several units have IBM 3234 matrix printers to capture hard-copy documentation to confirm decisions made.

In operation, the system starts as orders are received, batched and assigned to order entry operators. The operator evokes the preformated CRT screen appropriate to the transaction being processed, and proceeds to enter basic customer information, header codes and individual line items related to the order.

With that skeletal information, the system puts together a record containing complete customer background. Full customer identification, back-order practices, special packaging instructions, credit limits, carrier priorities, allowances, and calculated unit prices are all picked up from other system files.

All this information is available to an on-line inquiry terminal immediately after it is entered through the original keyboards. This "instant" availability is particularly valuable, MB noted, for prompt action by support functions, such as credit authorization.

Although customer service – the ability to accept, modify and respond quickly to customer needs – was the principal goal of the new order entry system, the company itself has reaped several benefits almost as by-products. The ability to spot and correct errors as data is entered online has, for example, meant fewer errors than under the old batch system.

The "paperless" system saves substantial amounts of paper and card stock, but it has also led to improved procedures by accounting department personnel. The system has also, in effect, forced better controls throughout the order entry process. Since credit checking is not based on paperwork, for example, items that need more evaluation cannot be put aside and inadvertantly lost.

Reduced costs for personnel and freight handling, as schedules are optimized, are other side benefits of the system. To keep customer service and the system's inner workings at efficient levels, MB and Keane Associates, a custom programming house, developed a data base made up of 13 separate files. Originally 23 files had been planned, but the access methods and complexity of such a structure would have prevented the immediate response the company saw as mandatory.

Debugging the Dbomp interface with CICS supplied by IBM, Keane organized the files into four major groups. Among the Dbomp/CICS problems encountered and resolved by Keane were slow response times, "memory lockups," and a ballooning overhead for software.

MB's desire to work with small, modular programs, heavy machine time requirements during testing and "major" learning curve problems also had to be overcome as the system took shape.

The learning curve problem is real indeed, an MB source stressed. "Anyone going into CICS for the first time should plan on the initial effort taking five to 10 times longer if the programming staff has a Cobol rather than a BAL background," he said. "It is an implementation that is exceedingly tough for a Cobol-trained staff."

Facing and solving these problems was difficult, time-consuming and costly, but the end results are making the effort well worthwhile, the company said. Once all printing of the invoices, shipping documents and other paperwork goes on-line, the half-hour processing cycle should become a reality as well as a design goal.

MMS Package Gives Up-to-Date Materials Data

ANDOVER, Mass. – Manufacturers with a 64K partition and three spindles of disk can have current information to provide day-to-day direction for the material planning operation with the MMS Net Change Materials Requirements Planning System just introduced by Software International.

The "net change" approach differs in technique and result from the "regenerative" approach used by some material requirements planning systems, the company said. Regenerative systems periodically recalculate an entire material plan; between recalculations, the plan may not be up-to-date.

The More It Changes . . .

The net change system makes corrections to the plan as the situation changes. Such things as engineering changes, unanticipated scrappage, inventory adjustments or master schedules changes are taken into account.

The MMS package is a batch-level net change system because it takes these adjustments for each batch of input data. It generates exception reports as soon as a condition that requires management consideration is detected.

The package supports planning periods adjustable in length from one day up. It also backs the use of firm planned orders to facilitate load leveling for shop labor planning, or machine capacity limitations and multiple location inventory tracking, so that the system is not tied to just one stockroom or warehouse.

Under the MMS software, management has a wide selection of order policies and options for both purchased and fabricated parts. The package also supports planning of requirements for custom engineered, one-of-a-kind orders, the company noted.

Periodic Reports

The system is based on eight separate but integrated files, and users can inquire against either the item master file or the order master records. In addition to the exception report marking a situation needing immediate attention, the software generates a number of reports periodically.

There are 80 modules in the system which is written in BAL and Cobol and requires 64K of main storage. It is available now for DOS shops under a single payment, four-year lease plan for $65,000. OS and IMS versions are also available and will be quoted on request, Software International said from 2 Elm Square, 01810.

B&B Job Support Expanded to DOS

SUNNYVALE, Calif. – IBM 360/370 installations can have job accounting support from a single vendor, even if they shift through the entire range of IBM operating systems, by utilizing the expanded line of packages from Boole & Babbage, Inc. (B&B).

B&B has recently added Murs DOS, originally developed by Webster Computer Corp., and SMS/CAS (DOS/VS), an enhanced version of the Virtue package also from Webster, to its own SMS/CAS for OS and OS/VS sites.

Murs reports execution of each program run in a DOS environment. As each program is terminated, machine utilization records are posted to a disk for later printout. In addition to being the source for a daily utilization log, these records are summarized into reports on operations usage, operator analyses, scheduling information reports and production and test session analyses.

Off-line, noncomputer activity and other data are also summarized by Murs. The system allows operators and programmers, for example, to enter their times devoted to particular projects. The Murs reports can be geared to either elasped times or total net times, B&B said.

SMS/CAS in a DOS/VS shop is described as a complete job accounting and project reporting system. Tracking all programs run under DOS/VS, it provides a daily log as well as a program efficiency and computer operations analysis.

Murs DOS is available for $2,970 and SMS/CAS (DOS/VS) can be acquired for $3,250. Current users who bought Murs from Webster may convert to the DOS/VS accounting system for $1,000 plus an annual maintenance fee of $480.

B&B is at 850 Stewart Drive, 94086.

Fortran Source Variations Defined

HAMPTON, Va. – Programmers converting Fortran programs from one computer system to another can gain more insight into their task with a free 20-page booklet from the Technology Utilization (TU) Office at Langley Research Center here.

The book outlines source program differences between the IBM 360, Univac 1108, CDC 6000 and Honeywell Fortran compilers. A handy minimal language concept included in the publication provides a subset of instructions compatible with all four computer systems under consideration.

Even though Fortran standards have been established, the TU officer at Langley noted, source programs for the target computers may differ in at least three ways. Some implementations, he said, go beyond the standard, and programs using nonstandard extensions would have to be recoded to be used.

Conversely, there are some features of the Fortran standard that are not present in all implementations. Even if a piece of coding is technically within the standard and is acceptable on one computer system, it too may have to be revised to run in a different environment.

Programming guidelines which were used in developing a Fortran IV CDC 6400/6500 program that was subsequently converted to Fortran V for the Univac 1108 are also presented in the book, the TU officer noted.

The booklet is cataloged as LAR-11177 and was developed under contract to Langley by W.R. Garner of Martin Marietta Corp. It can be obtained from the Langley TU Officer, Mail Stop 139-A, 23665.

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DAYTON, Ohio – Banks with an NCR Century 101 or larger Century system and high-speed Micr sorter/readers can match items deposited with their accompanying deposit slips while capturing all encoded data, with a Proof of Deposit software package now available without cost from NCR.

The float records created can be used as a basis for service-charging accounts that tend to have funds in float. As a by-product, the system also generates the "cash letters" to accompany transit items, since the system has the capacity to segregate "on-us" items from those to be sent along to other financial institutions. The Proof of Deposit logic is controlled by parameter tables for easy maintenance, the company noted.

CTS Expands Services To Typesetting Files

GLENDALE, Calif. – Camera-ready pages for manuals or texts can be created from IBM 360/370 or System/3 files through the expanded facilities of Computer Typesetting Services, Inc. (CTS). Customer input may be on magnetic tape, 80- or 96-column cards, paper tape or System/3 disk packs, the company said.

Editing software permits file updating for periodic revision of the documents produced. Output normally is from a Fototronic typesetting system, but proofs can be generated on a Varian Statos 31 printer/plotter while layouts are still being planned, CTS noted from 540 W. Colorado St., 91204.

MIT Summer School Offers DP Management

CAMBRIDGE, Mass. – The summer session at MIT's Sloan School of Management will include Computer Technology for Managers, a one-week introduction to hardware and software, designed to take the manager from novice to a good practical level of understanding. The course runs from June 4-8.

Information Systems for Managers is a two-week course of the concepts for successful information system design and implementation, being offered from June 10-21. Director of the Summer Session is in Room E19-356, MIT, 02139.

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Cobol Clinic

Rippling a Character May Be Sexy but...

I wonder if any other readers are as weary as I am of reading about the "best" way to initialize a block of storage in Cobol? I am not at all sure that I would program in Cobol, even if it were the last (or only) high-level language around. But in spite of my disinterest, Peter Dashwood's letter in the March 6 issue caught my attention.

Although I realize that "rippling" a character or field with an MVC instruction may look sexy, first you should run and grab a copy of Functional Characteristics for the CPU you use. On the 360/75 at the University of Illinois, the timing estimate for an MVC ripple is almost exactly twice as slow as doing the same thing but by moving in the initialization from a constant field area, where both fields are multiples of eight bytes long and starting on doubleword boundaries.

Example: blanking a print line.

MVC Ripple Way:

```
MVI LINE, C' ' initialize first byte
MVC LINE+1 (131), LINE and ripple down the line
execution time (360/75): 46.08 µsec (4-way intlv)
```

MVC Doubleword-at-a-Time Way:

```
MVC LINE(8), BLANKS move eight blanks
into line
MVC LINE+8 (128), LINE move blanks
through line execution time (360/75): 25.80
µsec (4-way intlv)
```

The second case requires that the print line be a multiple of eight bytes long (on the 75), and that both it and the eight blanks be doubleword aligned. In either of the two examples, the first instruction could be saved if the constant blank(s) can be located immediately in front of the line to be blanked. However, any way you cut it, the second case is very nearly twice as fast as the first.

Strange as it may sound, it is still possible to halve the execution time again. (This, however, must be reserved for those of us who program in Assembler Language, at least until an intelligent compiler is written, if ever.) This technique uses many more instructions than the above examples, but executes much faster than either one.

Bigger-but-Fastest Way:

```
STM 2,12,SAVE11 save registers 2-12
LM 2,12,BLANKS pick up 32 bytes of blanks
STM 2,12,LINE (reg. 1 points to line)
STM 2,12,LINE+44 blank out second third of
line
STM 2,12,LINE+88 and the last third of
line.
LM 2,12,SAVE11 and get back all 11 registers
execution time (360/75): 19.41 µsec
```

Of course, about one-third of that 19.41 µsec is to save and restore registers. If that is not fully necessary, about another six µsec are saved.

Not nearly enough programmers take advantage of the LM and STM instruction in moving data around. It is so fast because on the 360/75 the incremental time is .195 µsec per four bytes moved. On an MVC, the fastest one gets is about .160 µsec per single byte . . . three to four times slower! The improvement is particularly noticeable when setting or clearing large blocks of storage to some fixed value, since the larger the area cleared, the lower percentage of time spent saving and restoring registers.

Other comments on Dashwood:

- If you are unable to ripple a single byte with an MVC on your 360/40 (and if you really still want to) call your customer engineer, 'cause something's wrong. At the top of Page 54 – "Principles of Operation" specifically gives this as an example and claims that it does work, for all models of System 360.
- He should also point out that the ripple technique works differently left-to-right than right-to-left. One way will move an entire area left; the other way propagates a field to the right. However, as should be abundantly clear after reading the above, using the MVC instruction – particularly with large lengths – is generally a very inefficient way of moving data, and should be used with caution when it is used at all.

Moral of the story is: you can tell an efficient 360 programmer easily. He will have a green card in one hand and a Functional Characteristics/Instruction Times table close to hand, referencing it frequently!

Perhaps a secondary moral would be that on programs of this sort, a better-performing program will almost always turn out to be written in Assembler Language by a capable and conscientious Assembler Language programmer.

And remember, when buffering things, it is almost always more efficient to transfer pointers to data than to move the data itself! – Gordon E. Peterson III, Champaign, Ill.

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Instruction Guide Shows

Teaching Materials for DBMS Lagging

J. Daniel Couger On Education

A mixture of disappointment and delight occurred in my preparation of the 7th edition of the *Guide to Audio/Visual Instruction for Data Processing.* The delay in producing materials for teaching data base management systems (DBMS) was disappointing. On the other hand, some excellent new material plugged other gaps in the array of instructional material: a unique course on interpersonal skills for DP managers, several VS2 courses, a CICS course, two new applications courses and several needed modules for the system analysis and design courses.

Sales of the media producers expanded rapidly last year, despite the reduction of spending in many areas of data processing. Of the "Big 3" (Advanced Systems, Inc. (ASI), Deltak, Edutronics), one reported a sales increase of 40% over the prior year; another, an increase of 25%.

The customer base expanded in both academia and industry. Customer lists of the media producers include more than 100 universities and 100 community colleges.

New Data Base Courses

The educational media industry is responding to the surge of interest in data base technology. ASI, Deltak and Edutronics now have general data base courses. However, none of them has been willing to commit resources to specific data base management systems. Such a posture was understandable in respect to IMS, the highly complex IBM product. The media producers were slow in recognizing the widespread move to IMS and are compounding the delay by waiting to proceed until IMS/VS becomes clarified. The independent vendors aren't alone – IBM hasn't produced an IMS course either.

The delay in producing courses on other DBMS is enigmatic. Two data base systems, Total and Adabas, have had multimillion dollars in sales, according to *ICP Software Newsletter* (January 1974). The same publication shows that Mark IV and Asi-st, file managers that have been interfaced with DBMS, also have had multimillion dollars in sales.

Of the "Big 3" media producers, only Edutronics appears to be near to producing a course even somewhat related to DBMS; a Mark IV course scheduled to be available in 1975. As could be expected, however, a small company has moved into the gap. First Computer Services, Inc., Charlotte, N.C., has produced an audio-visual IMS course.

Despite the lag in responding to the need for DBMS courses, the media producers released new products in other important areas this past year. Products recently available, or to be released in the next 90 days, are: DOS/VS Operator Training (ASI, Deltak, IBM), OS/VS2 Operator Training (ASI, Deltak, IBM), PL/I (ASI, Deltak, IBM) and CICS (Edutronics).

Profession-Oriented Courses

An example of the currency and quality of courses available is Deltak's new course on "Interpersonal Skills for DP Managers," which generated great interest at the national meeting of the American Society for Training Directors. Representatives of more than 125 companies witnessed the demonstration.

This unique course is built around the behavioral technique of Transactional Analysis, popularized by Michael Harris' book, *I'm O.K. – You're O.K.* It is used for both individual and small group training situations. I'll be using this Deltak course for one of my classes this fall – it is useful for both the industrial and academic environments.

I also class-tested Edutronics' new Data Communications and ANS Cobol Efficiencies courses this past semester, with excellent results. The newly released Edutronics' user-oriented course "Computer System Fundamentals" is comprised of 20 modules from other courses and a new manual. These materials will be used in functional-area courses in our undergraduate and graduate courses next fall.

ASI added two more courses to its well-received applications series: Purchasing Management and Techniques and Capacity Planning and Shop Floor Control. The latter was developed by Ollie Wight, a very successful instructor as proven in prior manufacturing-oriented applications in multimedia courses by ASI.

In response to my question about forthcoming products, Dave Napper, manager of independent study program development, gave the stock IBM answer. The company policy is not to provide preliminary product announcements in any product area. However, the doubling of its product line in one year indicates IBM's new emphasis in multimedia courses. When asked if the company plans to market general education courses (e.g., a course in system analysis and design), Napper responded that the principal thrust would be courses to support specific product lines.

John DeAno, vice-president for product development, reports that ASI courses available in the next quarter include: VS 1/2 System Service (utilities, linkage editor, dumps, etc.), DOS/VS JCL, DOS/VS Concepts and Facilities, Computer Operator Training for System 370 and VSAM.

Robert King, president, reports that Deltak is expanding its system series, to be available in August and September. He was evasive on answering the question on IMS/2, but implied that such a course was on the drawing boards. Products to be added to the Deltak line in the next 90 days include: DOS/VS for Operators, OS/VS2 for Operators, OS/VS2 Debugging and PL/I Programming.

Pat Sorrentino, vice-president of product development, reports that Edutronics' data control course and a course on programming in a VS environment will be available in 1974. Executing programs in VS and VSAM courses are also scheduled for 1974. The data communications course will have three added modules for the third quarter.

Ben Graves, president, reports that Data Processing Education Network (DPEN) has changed its marketing strategy this past year. For the near future, the company will market its products in the eastern half of the U.S. using a vertical border from Illinois to Kentucky to Florida: "We've pulled in our horns in marketing to better serve our existing customers."

The 7th edition of the *Guide to Audio/Visual Instruction for Data Processing*, can be purchased for $3 from *Computing Newsletter*, University of Colorado, Cragmor Road, Colorado Springs, Colo. 80907. (The cost is $4 if an invoice is required.)

Couger is professor of computer science and management at the University of Colorado.

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Firm Centralizes With On-Line Banking Terminals

By Patrick Ward
Of the CW Staff

SHAWNEE MISSION, Kan. – Moving towards centralization has brought Inter-Continental Computing, Inc. an unexpected benefit: the ability to service a wider variety of terminal types, and therefore a larger group of potential customers.

The company has been processing transactions on-line for its mostly savings and loan and credit union customers since late 1967 and now handles about one and a half million on-line accounts.

When the firm decided two years ago to centralize its operations, it had a Los Angeles branch with three Burroughs B500s handling processing in that area, a Houston branch with one B500 and another B500 at headquarters here.

ICCI Vice-President Don Sobek points to the line adapter boards inside a multiplexer box at the firm's Shawnee Mission headquarters. The boards, controlled by microprocessors in a Qantel minicomputer concentrator, help give the firm the ability to service different types of terminals.

The purpose of centralization was to bring the company's best technicians to one site, to save on duplications of software development and to reduce overall costs, said Don Sobek, executive vice-president.

Centralization, he added, would also make it less expensive for the company to expand its service into new areas, since investment in any new branch office would be smaller.

Mini Concentrators

ICCI's centralization has meant placing a Qantel Answer 6 minicomputer concentrator at each of the company's three sites, plus putting in another Qantel Answer 6 as a front end to a 270K Burroughs B3500 at headquarters here.

The three Qantel concentrators are equipped with multiplexer boxes which adapt the line disciplines of incoming messages from various terminals. With further conversion done in the front end and in the B3500 itself, ICCI is already able to service Burroughs B606 bank teller terminals and TC-700 terminals, Olivetti TC 380s and TC 349s, and is "about halfway in with the NCR 270," according to programming director Chuck Budd.

When ICCI relied solely on the branch offices' B500s to do on-line processing, the firm could support Burroughs terminals and no others, Sobek recalled.

ICCI's salesmen, like their competitors, had to persuade prospective customers to use their vendor's equipment, "just because our service could only be utilized through it," Sobek said.

The problem became easier to resolve with the Qantel systems and the B3500. Input from various terminals is not transparent to the B3500, but "it is close," Budd noted, "and similar terminals, especially programmable terminals, can be made . . . transparent."

Since February of this year, a Qantel Answer 6 at the Los Angeles site has been controlling two hardwired multiplexer boxes, one handling 10 phone lines, the other seven.

Customers in the area use the full range of terminals ICCI supports to enter data asynchronously at speeds up to 1,200 bit/sec.

Each multiplexer box in the Qantel system contains up to 12 line adapter boards controlled by a 2K microprocessor in the Qantel system, Budd explained. A third microprocessor drives the outgoing data stream through International Communications Corp. modems at 7,200 bit/sec synchronous over full-duplex leased lines to the Qantel front end here.

User Casebook

The Los Angeles system's main memory could also be used to control the line adapter boards, Budd mentioned, but is primarily used to drive peripherals.

The Answer 6 can print reports from tape, read cards and transmit them on-line, and also provide control functions.

At the central site, the Qantel front end polls the three lines from the concentrators and sends the stream of data to the B3500 which writes its output simultaneously on disk and tape.

Either tape or disk is processed at night and reports for hard-copy output are sent back to the branch Qantels to be printed and mailed from there.

ICCI now processes about half of its accounts through its centralized system and expects to convert fully to it by the third quarter of this year, Budd stated. The Los Angeles office, which had nine systems and programming staff members, is now down to three, and even fewer people may be required, he noted.

Once the company is fully on the centralized system, Sobek said expenses should be 20% to 25% less than they would have been with the previous system.

Though proud of his company's centralization program, Sobek called it "a tremendous undertaking" that ran a year behind schedule. He also mentioned that his firm has about 20 systems and programming people with about 140 collective years of programming experience among them, half of it in on-line work.

TI Adds Clustered System, Portable Teleprinter

HOUSTON – Texas Instruments has added a processing terminal system to its line of minicomputer equipment. The terminal system consists of one to eight TI Model 913 video display terminals connected to a processing controller arranged in a cluster configuration.

The Model 913 terminal features a 12-in. diagonal nonglare screen, programmable cursor positioning, protected display fields, processor control functions, a selection of detachable keyboards and a private refresh memory. The 960-char. display features alphanumeric and special characters arranged in a 12-line by 80-char. format.

The programmable cluster terminal processor typically assumes control of the operator/terminal dialog, thus providing operator prompting and dialog techniques that are impractical with conventional terminals, TI said. In addition, the cluster terminal controller directs communication activity, and offers error detection and recovery as well as adaptability to a variety of circuit disciplines and transmission codes. A synchronous and asynchronous modem (or a combination of modems) can be supplied as an integral part of the cluster controller.

Other communications abilities include optional auto-call and auto-answer modules for both Touch-tone and pulse dialing. These features can be used to relieve the operator of establishing a connection with a host system when the public dial network is used for communication, the firm noted.

TI has also introduced the Model 735 portable data terminal.

Weighing under 25 lb, the unit will fit under commercial airline seats and includes a full Usascii keyboard with upper/lower case and an auxiliary EIA RS 232C interface capability, which allows an external device such as modem or a cassette tape transport to be interfaced to the keyboard/printer or the acoustic coupler.

Additionally, the Model 735 offers users switch-selectable operation at 10-, 15-, or 30 char/sec speeds, half- or full-duplex communication, and single- or double-line spacing.

The price for the Model 735 portable terminal is $2,595; lease rates range from $95/mo to $140/mo, including maintenance.

In conjunction with the addition of the new Model 735, the earlier Model 725 price will be reduced to $2,495 from $2,780. Effective Nov. 1, the company will no longer produce new units of the Model 725. However, TI will continue to offer the Model 725 for purchase or lease as used equipment on an "as available" basis and will continue full spares and service support for its customers. TI's address is P.O. Box 1444, 77001.

AT&T/MCI—The Beat Goes On

WASHINGTON, D.C. – The FCC has ordered AT&T and the Bell System operating companies to provide MCI and other specialized carriers with FX and CCSA private line facilities "on a nondiscriminatory basis." The order was the latest in the continuing legal saga concerning the private line facilities.

Bell was given 10 days to comply and it was ordered to "cease engaging in any conduct which results in denial of or unreasonable delay in establishing" the required connections.

The move was hailed by MCI as removing any doubts that competition is here to stay and that users will now receive the services they want and need.

AT&T in turn again went to court petitioning the U.S. Third Circuit Court of Appeals in Philadelphia for a review of the FCC order. Only days earlier, the court had ruled that the issue should be decided by the FCC.

Bell's petition called the FCC ruling "arbitrary and capricious" and said it rested on "premises that are neither rational nor supported by substantial evidence. Several days after the petition for review, Bell asked the court for a stay of the FCC order.

One industry source close to the continuing legal moves said the attorneys for both sides seemed to be the main beneficiaries of additional legal challenges.

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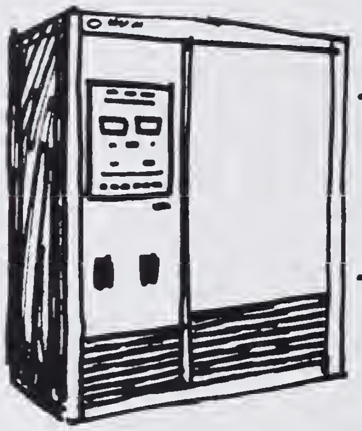

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Singer Supermarket POS System Based on 940 Intelligent Terminal

NEW YORK – The Singer Co. has entered the supermarket point-of-sale area.

The Singer system features a modular approach that allows food retailers to tailor exact configurations to meet immediate needs, and then upgrade to Universal Product Code (UPC) scanning when source labeling and in-store marking techniques make this mode feasible.

The key component of the Singer system is the Model 940 electronic terminal, which can operate initially as a freestanding cash register and later be field-upgraded to collect and control data required for a front-end operation and a backroom management system.

The Model 940 is an intelligent, programmable terminal that performs the basic point-of-sale functions. It extends price, calculates tax, displays amounts, accepts payment, figures change and gives descriptive receipts. The keyboard has 10 numeric and 16 functional keys that guide the checker through the correct operating sequence. Terminal capabilities include 11 programmable departments and 44 stored totals.

A special reverse key is used to correct over- or under-rings, department and amount entry errors, or issue credit refunds for returned merchandise or bottles.

Optional attachments for the terminal include a remote cash drawer, electronic scale, change dispenser and remote customer display. The Model 940 terminal is "base priced" at $3,200.

When a supermarket is ready to upgrade to an in-store management system, a Singer computer is added to collect and combine all transaction data from up to 64 store checkout terminals, accumulate department and checker totals and balance cash drawers.

For a complete inventory control and management system, the supermarket adds UPC scanners and a second computer to perform automatic price lookup. Both computers are fully compatible and are connected by a failure monitor for mutual backup and assistance during peak activity hours.

The system reportedly can eliminate 15% to 20% of a store's check lanes and save up to 40% in checker labor.

Delivery of "production units" is scheduled for the second quarter of 1974 from 30 Rockefeller Plaza, 10020.

Comsat Files for Digital Service

WASHINGTON, D.C. – Communications Satellite Corp. (Comsat) has filed proposed rates with the Federal Communications Commission for a medium-speed digital data satellite service called Digisat.

The data service, initially for service between the U.S. mainland and Hawaii, will make available digital data channels at speeds of 2,400-, 4,800-, and 9,600 bit/sec. The service is designed for use by international common carriers.

The proposed monthly rate for a digital data satellite circuit between the U.S. mainland and the Hawaiian earth station will be $2,700 for 2,400 bit/sec, $3,100 for 4,800 bit/sec and $3,900 for 9,600 bit/sec.

Expansion of Digisat to European points is expected later this year after completion of tests between the U.S. and several European countries, Comsat said.

If Data Communications is part of your future, then this unique seminar should be on your schedule.

If you're now involved in Data Communications (or will be soon), we'll help you learn the ins and outs of the data communications field.

This is the seminar that wraps it all up for data communications users. It's called *Data Communications – The Executive Imperative*, and it covers both fundamentals and applications-oriented subjects ranging from transmission theory to terminal selection techniques. It gives you what you need to know to plan effective communications systems in two busy days. And that's saying quite a lot. Because data communications is a complicated area with many problems for the user. Proper planning is a must. And this seminar tells you how to go about it.

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- Basic terminology of the field.
- Tariffs and cost-savings.
- Effect of transmission problems on a network.
- The modem – how it works and what it does.
- Terminals and their performance.
- Multiplexing and data concentration.
- Line-control software.
- Network organization and design.
- How to upgrade to a bigger system.

Free reference materials and continuing updates

As a participant in the Data Communications Seminar, you'll receive a valuable set of reference materials prepared by the ICC Institute. These materials include a comprehensive 2-volume looseleaf outline of all course materials, a copy of "Data Modem Selection and Evaluation Guide" by Vess V. Vilips, a "Data Communications and Teleprocessing Dictionary" and a line-cost calculator.

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Seminar Leader is Dr. Dixon Doll, a highly respected teleprocessing consultant

Dr. Dixon Doll leads the expert faculty at this seminar. He has his Ph.D. in Systems Engineering from the University of Michigan and many years of experience in this field as a consultant and educator. He has performed work-study with communications techniques at M.I.T., taught graduate-level computer systems design, and has served as professional consultant to such firms as IBM, Raytheon, ICC and MCI. Dr. Doll is in charge of our faculty of experts, and takes an active part in the entire seminar.

You should attend this seminar, if . . .

- You are currently involved in data communications on a management or operational level and wish to expand your knowledge of the field.
- Your company will be going into this field in the near future.

Charges and Enrollment

The total cost for this two-day seminar is $350, including workbook, reference materials, year-long update service, luncheons and continental breakfasts. This cost does not include hotel rooms, if necessary.

To enroll, look over the schedule below, fill out the coupon and send it in. Remember, enrollment must be limited, so don't wait until it's too late!

Data Communications, The Executive Imperative

Course materials and outline prepared by the ICC Institute.

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Private Systems Seen a Threat To Canada's Nets

By T.M. Whiteman

Special to Computerworld

TORONTO, Ont. – The effectiveness of Canada's telecommunications networks in the future could be jeopardized by the proliferation of private computer communication systems, according to Brian Hewat, assistant vice-president of the computer communications group, Bell Canada.

He said the country is at the fork in the road in terms of computer communications and "we must choose which direction to follow.

'Intelligent' Concept

"Down one path lies a rational, efficient and economic information transfer system that can serve all Canadians based on the 'intelligent' network concept," he said. "This concept is being developed by Bell Canada and is a network that links many different types of terminals and computing equipment to perform a number of computer communications functions.

"Down the other path lies the possibility of an uncoordinated and economically wasteful nonsystem that could result in a situation more chaotic than what we see developing in the U.S.," he said.

Speaking to the Association for Systems Management here, he said many Canadian business organizations, especially the large national banks with hundreds of branches each, are on the verge of deciding what information systems they require and they will likely commission systems to meet their needs.

Hewat said a proliferation of private systems would be wasteful duplication of facilities and be wasteful of capital resources. There would also be demands for the eventual interconnection of these private systems, which would then be very difficult to and costly.

Could Be Disastrous

He pointed to the U.S. telecommunications scene where there is a proliferation of competing carriers, many of them locked in legal struggles. Such a situation would be disastrous for Canada, he said.

Hewat's organization is planning a shared-use "intelligent network" which uses packet switching technology, in which all information is converted into uniform sized packets for more efficient transmission, he noted.

It's everything you've ever wanted in a peripheral for your mini. With a price/performance ratio superior to every other electrostatic printer/plotter on the market.

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We say that the new Gould 5000 is the best buy on the market, with the best features of any mini-computer printer/plotter. And our Pete Highberg or Bill Koepf can prove it to you. Get in touch with them now at Dept. CW5, Gould Inc., Data Systems Division, 20 Ossipee Road, Newton Upper Falls, Mass. 02164.

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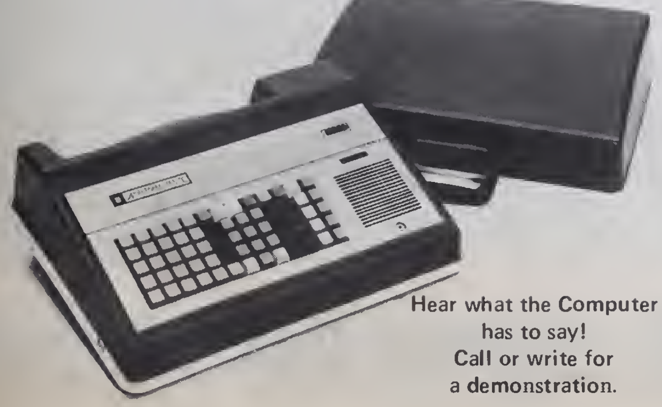

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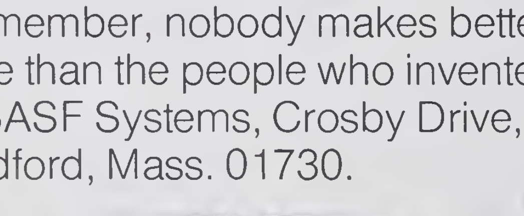

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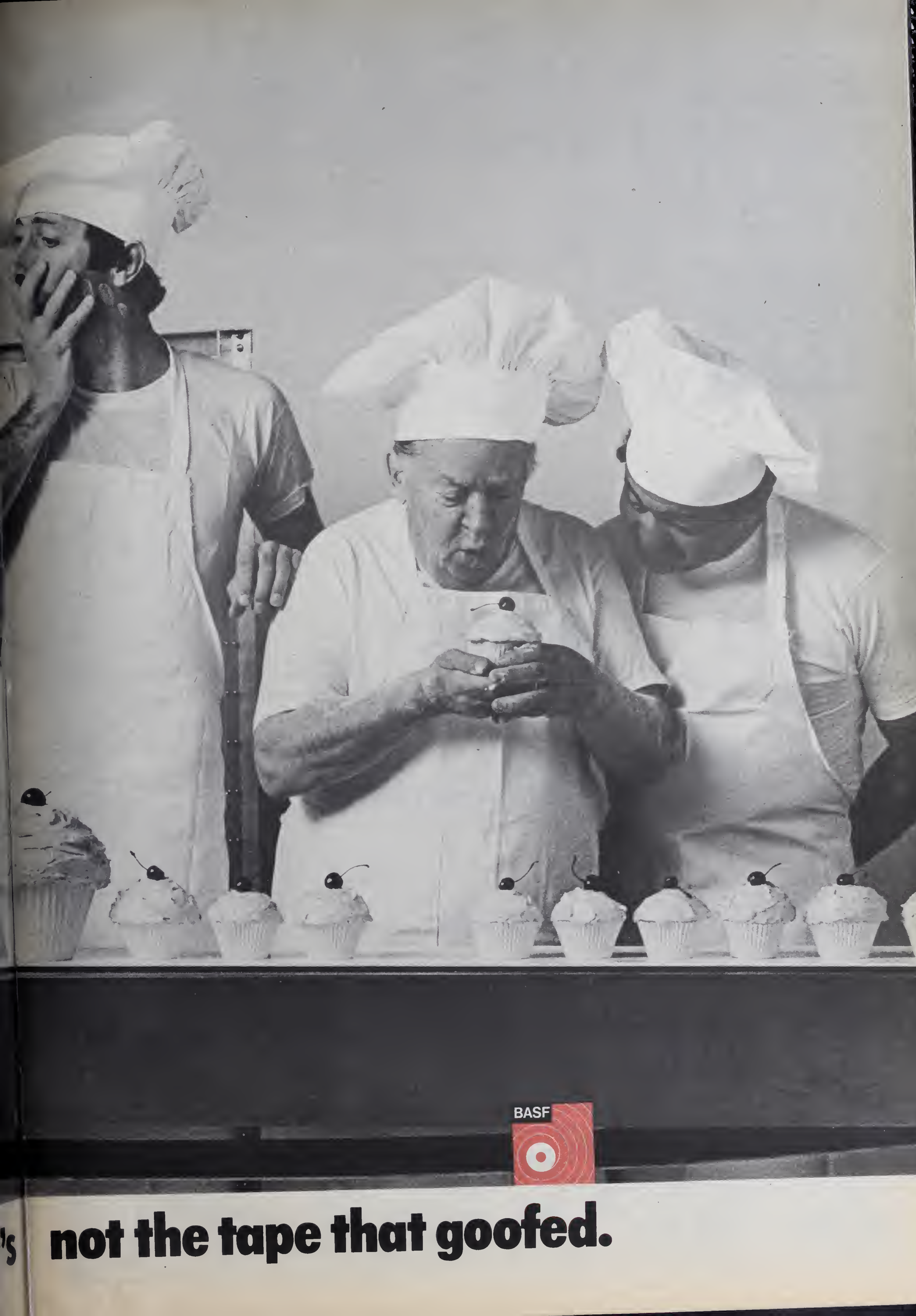
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Line Interfaces Key to Mini Front Ends

By Patrick Ward

Of the CW Staff

BOSTON – Users evaluating minicomputer-based front-end processors should pay a lot of attention to the kind of line interfaces the minis support, William G. Gallagher, manager of systems and programming at Savings Management Computer Corp., (SMCC) told a Computer Caravan workshop here.

Gallagher spoke from experience. His firm handles four million accounts for a data file of 43 banks and processes about 100,000 on-line transactions a day with two- to three-second response times.

Presently the firm runs 15 1,200 bit/sec asynchronous lines supporting over 280 terminals, including 43 IBM 2980s, 169 Financial Data Services teller terminals and 70 Bunker Ramo 2206 CRTs.

Additionally, there are 168 150 bit/sec lines supporting 235 IBM 1060 terminals.

A year ago the company was moving to new headquarters and decided to convert from one IBM 360/50 using two IBM 2703s and a Bunker Ramo 2228 controller to two Model 50s and two Digital Equipment Corp. PDP 11/20 programmable front ends.

The two 512K IBM CPUs operate under DOS. Each dedicates 420K to the TP work.

SMCC went to the mini front ends to reduce CPU overhead, Gallagher remarked, but while the company had been told that one of the mini front ends "could handle our entire load, . . . it turned out that one machine couldn't handle half," he said.

User Casebook

SMCC had put in two minis to provide for both redundancy and growth, but even when the two minis were splitting the workload they couldn't handle the existing amount of traffic, Gallagher said.

The mini implementation was to consist of an emulation phase, and a second "full-blown front-end" phase where all the Btam overhead would be transferred out of the CPU.

But with throughput problems appearing in the emulation mode, SMCC never got to phase 2 with the minis and replaced them with Memorex 1270 and Bunker Ramo 2228 control units in January 1974.

The problem with the minis lay in their "bit banger" line interfaces, Gallagher said.

This was the only line interface available on the PDP 11/20 at the time, noted Robert Howe, manager of operations and communications for the firm.

A "bit banger" samples every incoming bit five times, with 40 interrupts to process every eight-bit character. The amount of data coming in to SMCC was just too much for this type of interface to handle, Gallagher stated.

An alternative type of line interface, he said, is the character assembler, which samples each byte only once. Even better is direct memory addressing (DMA) with only one interrupt per message segment. However this type of line interface can be very expensive on a mini, Gallagher pointed out.

Ask for Benchmark

So instead of asking a manufacturer just about a mini's cycle time – which is only one index of a machine's capability as a front-end processor – a user should spell out the configuration he is planning and ask the vendor for a benchmark.

The user should get a benchmark figure based on the particular line interface configuration; the number of lines and their bit/sec rate; the environment, autopoll or other; the error functions and so on.

A user might also ask about adding core or ports and be assured there is a bus extender available, but the user should ask the vendor about "limitations on extending the bus, how the time on the bus degrades when you extend it and so forth."

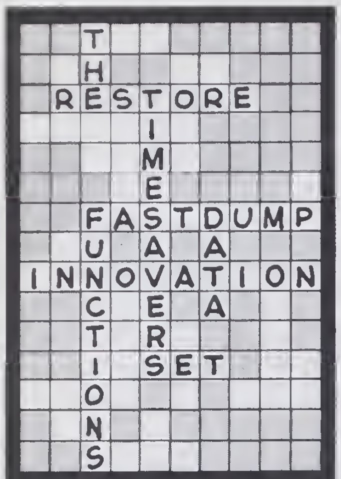
The two hardwired Memorex 1270s which replaced the minis "are nice pieces of equipment but they don't give us the flexibility a front end would," Gallagher observed.

"No hardwired device can remove the overhead that we want," he continued. SMCC will go to a mini front end eventually, because a front end would make new terminal interfacing easier, would take overhead from the CPU and offer more diagnostics.

Gallagher added that he is looking for a device that can provide a standard text mode across the 360 channel by converting text as well as the "envelope" surrounding it.

"When they don't convert text you have to upgrade all your application software for the support of that particular terminal," Gallagher noted.

Other things to consider in evaluating a mini, Gallagher said, are word size and memory addressing.



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Bits & Pieces

Data General Tape System Operates at 75 In./Sec

SOUTHBORO, Mass. – Incorporating both a vacuum column and a tape cleaner, Data General's magnetic tape subsystem can have up to eight drives.

The drives operate at 75 in./sec with densities of 556- and 800 bit/in. on the 7-track model and 800 bit/in. on the 9-track version. The first unit of a system is priced at $9,900 and additional units cost $6,700 each.

Rewind speed is 200 in./sec. The units are software-compatible with other Data General tape drives and minicomputers.

Board Generates Video Graphs For Use With HP 2100 Minis

CUPERTINO, Calif. – Users of Hewlett-Packard 2100 minicomputers can directly plot graphs on standard television monitors with the 4406 graphic video generator from Intermedia Systems.

This single plug-in interface card contains over 64K bits of semiconductor storage to continuously refresh the entire TV raster without computer interaction. Every point on the screen is individually stored so there is no limit to the complexity of the display, other than the basic 256 by 256 resolution.

The solid state circuits generate composite video and synchronizing signals and provide three simple programmable functions – set a point, clear a point and clear the entire screen. The 4406 derives all required power from the computer backplane and provides a 1 V signal suitable for operating RS-170-type TV monitors.

The 4406 is priced at $2,750 from the firm at 20440 Town Center Lane, 95014.

Data Tablet Interfaced to Calculator

FAIRFIELD, Conn. – Summagraphics Corp. has developed an interface between its data tablet/digitizer and the HP 9800 series of calculators.

The data tablet digitizes graphical source data, enabling the calculator to compute distances, perimeters, areas and regressions.

Prices for digitizer and interface range from $1,750 to $4,400 from the firm at 398 Kings Highway, 06430.

Print Data on Metal Labels

MILWAUKEE – Users with applications for printed nameplates can computerize the printing of information with W.H. Brady Co. metalized or colored polyester film labels on fanfolded or roll stock.

The labels can be set up horizontally and have a special coating that is said to accept and retain the conventional ribbon ink. Each label is die-cut to customer specifications and has a pressure sensitive backing to provide permanent bonding on either flat or curved surfaces. The firm is at 750 S. Glendale Ave., 53201.

Electrostatic Plotter Now Adapted for IBM 360/370

By Vic Farmer
Of the CW Staff

NEWTON, Mass. – IBM 360/370 users considering electrostatic printing and plotting can now obtain a comprehensive software/hardware combination that can operate either on-line or off-line.

The Plotmaster system from Gould, Inc. attaches to the CPU's selector, byte multiplexer or block multiplexer channels, and can operate either in byte multiplex or burst mode on the multiplexer channel.

The system itself consists of a Gould 5000 (11-in. wide) or 5100 (22-in. wide) electrostatic printer, optional tape drive for off-line operations, a controller and software including a line printer driver and Plot software for the mainframe.

The Plot software takes any Calcomp drum or flatbed plotter applications, and using less than a 64K partition on the mainframe, recompiles, sectors and converts the plot for the forwarded-only paper movement required by the Gould printer/plotter. Normally plotters can backtrack and move around considerably over the paper. This resectoring does require the use of a disk through the mainframe, but Gould claims increased plot speed of up to 400 times.

The programs are written in machine language, but subroutines are callable in Fortran, according to Gould.

Using the basic printer software, the 5000 operates at 1,600 line/min and the 5100 prints 1,300 line/min. In addition, the 4820 printer which prints 3,600 line/min can be used.

Gould's Display language allows a business user to create business graphics such as pie charts, bar charts and line charts.

In the off-line mode, a 9-track 800- or 1,600 bit/in. read-only tape drive is used, and additional software is available so that users with Univac or Control Data computers in addition to their IBM CPUs can get more utility from the system.

A basic controller and printer system costs $20,400 or $615/mo on a three-year lease. The off-line system has a tape drive and costs $39,700 or $1,190/mo. One- and two-year leases are also available.

Gould is at 20 Ossipee Road, 02164.

Gould Plotmaster electrostatic printer/plotter attaches directly to IBM 360/370 computers.

For Microprogramming Power

Microprocessor Fits Into Mini

NEWPORT BEACH, Calif. – Data General Nova and Digital Computer Controls D-116 users can incorporate into their minis a microprogrammable processor that performs any microprogram process in parallel with the normal processing of the minicomputers and at substantially higher speeds, according to Educational Data Systems (EDS).

Using EDS' Micronova, typical speeds for four-word floating point decimal operations are up to 100 times faster than a Nova 1200 using software arithmetic, the firm said.

Occupies One Slot

The processor occupies one slot in the mini, and one or more Micronovas can operate on the data channel in parallel with the standard CPU of the Nova. The Nova initiates execution of a microprogram by an output instruction. Then the Micronova proceeds in parallel with the Nova CPU, accessing macros and data from the Nova core through the data channel.

Each Micronova has four 16-bit accumulators, up to 64 words (16 bits each) of random access memory (RAM), and up to 4K of programmable read-only memory (Prom). The Prom stores microprograms that are initiated by macros stored in either the mini's core or RAM. The RAM is used to store data and intermediate results as well as macroprograms that must be operated at very high speed.

Half-Byte, Byte and Word

The Micronova has half-byte, byte and word addressing modes which facilitate operations on decimal digits, bytes and full 16-bit words. It also has provision for handling two-, three- and four-word precision numbers.

When programmed as a floating point decimal arithmetic unit, the Micronova provides four precision options: one-word integers in the range ± 7999; two-word, three-word and four-word floating point numbers, giving six, 10 and 14 decimal digits respectively.

Applications

Suitable applications include floating point arithmetic, either binary or decimal, character string processing, graphics control, matrix operations, fast Fourier transforms, spectral analysis, sorting and control of special devices, according to the firm.

The availability of an assembler and the ability to operate microprograms from either the Nova's core memory or the Micronova's Prom facilitates the writing and debugging of microprograms, the firm noted.

The price of the Micronova is $3,000. Firmware is priced separately.

The floating point decimal arithmetic firmware that occupies 512 words of Prom, sells for $1,000. Delivery is 60 days.

Educational Data Systems is at 2415 Windward Lane, 92660.

TI Revamps 960 for 4K RAM

HOUSTON – Texas Instruments (TI) has revamped its 960A minicomputer to incorporate 4K random access memory (RAM) integrated circuits.

The 960B can have up to 65K of 16-bit memory incorporated into the main chassis, and this means users will not need to add a memory expansion chassis for this size memory, TI said.

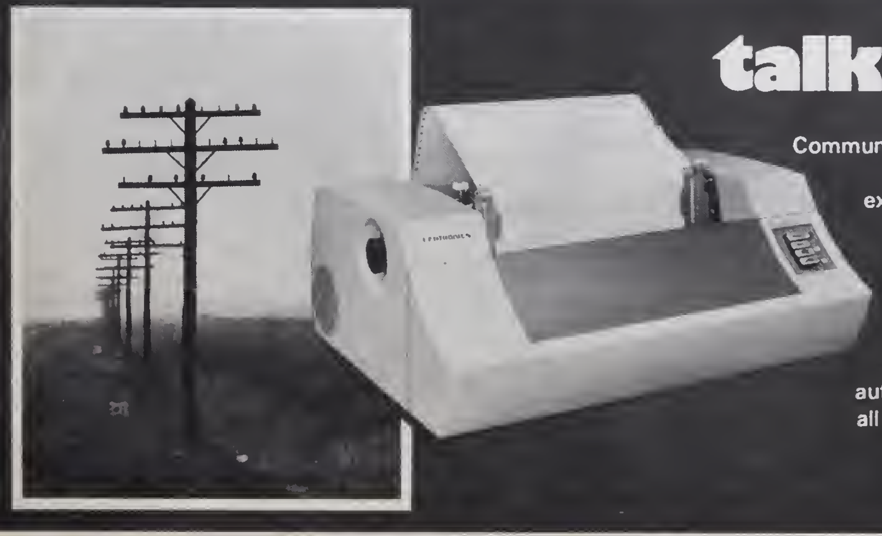
The 4K RAM chips are used in plug-in sockets to ease replacement for field repairs, and an error detection and correction circuit can identify any failed parts, according to TI.

With this feature, a one-bit failure is automatically detected and corrected and multibit failures are detected for each 16-bit word processed through memory.

The 960B is software-compatible with the 960A.

A 960B with 8K of 750 nsec cycle time memory is priced under $4,000 in the rack-mounted version, and includes power supply, direct memory access channel, four communications register unit ports and automatic error detection/correction. Optional features include hardware multiply and divide, bootstrap loaders and a battery pack for memory protection and automatic restart.

TI can be reached through P.O. Box 2902, 78767.



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Two Companies Offer Semiconductor Add-Ons for PDP-11s

Two manufacturers – Interactive Information Systems and Monolithic Systems Corp. – have introduced semiconductor memory for DEC PDP-11 minicomputers.

A PDP-11/45 can use an Interactive Information Systems IIS-75 with a 450-nsec cycle time and 350-nsec access time under DEC's RSTS or RSX operating systems.

A PDP-11/40 or below may use the IIS-85 with a 675-nsec cycle speed and 450-nsec access time. The systems contain their own power supplies and interfaces with the Unibus, and are expandable in 8K increments to 32K.

In the 32K maximum configuration, the IIS-75 is priced at $11,000 and the IIS-85 is priced at $7,860. The firm can be reached through P.O. Box 37403, 45222.

The Monostore III from Monolithic Systems also has a cycle time of 650 nsec and an access time of 450 nsec – a combination that boosts throughput by about 20% over conventional core memories, the firm said. The Monostore III in a 32K maximum configuration is priced at $7,500 from the firm at 2700 S. Shoshone, Englewood, Colo. 80110.

Turnkey System Supports Eight Hand-Held Terminals

MOUNTAIN VIEW, Calif. – Users with inventory and material control problems might find an answer in the Merlin 6000 turnkey system from Grubic Associates.

The 6000 uses up to eight hand-held terminals for information entry and display on up to 6,500 stock items. Automatic error checks are flagged to the entering clerk at the time of entry to reduce errors, and because the information is entered directly by the originating clerk, keypunch operations are eliminated.

The system reports short stock conditions and gives an audit trail of every transaction.

For $27,500, the user gets a 16-bit CPU with over 132K (words) of storage, one hand-held terminal, a teletypewriter with paper tape capability and dedicated software. Additional terminals are priced at $500 each. The firm can be reached through P.O. Box 1088, 94042.

Tape Drive Records at 800 Bit/In.

ROCHESTER, N.Y. – Sykes Datatronics, Inc. has an 800 bit/in. cassette tape drive, the Model 80, that is available with software and interfaces for several minicomputers, the firm said.

The drive is priced at $2,000 from the firm at 375 Orchard St., 14606.

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OEM Products

(While equipment in this column is primarily for Original Equipment Manufacturers (OEMs), in most cases it is also available in single units to interested users. Further, while much of this equipment is not presently available as such to the end user, it does give some indication of techniques and products that may be incorporated into end-user equipment.)

Tape Spooler Added To Paper Tape Reader

SAN GABRIEL, Calif. – Addmaster Corp.'s Model 650 paper tape handler is a spooler designed for use with the Model 601 paper tape reader.

The spooler reads step-by-step on external command or will run at 150 char./sec. The reader/spooler combination stops on character and has automatic end-of-tape and broken-tape sensing.

Prices for the tape handler range from $321 and the readers are priced from $175. The firm is at 416 Junipero Serra Drive, 91776.

Kennedy Formatter Is Ansi-Compatible

ALTADENA, Calif. – The Model 337 Ansi-compatible tape formatter from Kennedy Co. reads and writes 1,600 bit/in. phase-encoded data on the 1/4-in. 3M cartridge. Control functions have been designed to minimize complexity of the computer interface, however, the firm said.

Priced at $1,000, the formatter is available from the company at 540 W. Woodbury Road, 91001.

EPI Has Data Loader

DENVER – The STR-Link portable tape cassette program loader from Electronic Processors, Inc. has a read/write capability of 110-, 150-, 300-, 600-, or 1,200 bit/sec through a 20 mA current loop or RS 232 interface.

Designed for on-site loading of programmable controllers, remote computers and terminals, the unit is priced at $995 from the firm at 1265 W. Dartmouth Ave., 80110.

Burroughs Has Cabinets

ROCHESTER, N.Y. – Modular cabinets are available in base or stacking units for storage of cartridge disk packs and 96-column cards from Burroughs Business Forms and Supplies Group. Disk modules provide vertical storage of disks and 96-column card modules provide storage for up to 30 trays with a total capacity of 72,000 cards.

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Slaughterer Beefs Up Sales Analyses

SELMA, Calif. – As a by-product of the weekly preparation of statements, management at Diamond Meat Co. used to get a sales breakdown on 150 products. Then the San Joaquin Valley beef slaughterer replaced its conventional ledger card accounting machine with a minicomputer-based business system.

Now a daily sales analysis for 150 product lines is produced showing quantities, weights, prices and dollar totals for each category, plus summary totals for the day's business as a whole.

In addition, office manager Ron Oaks said, the company is able to validate the weight and price of every line item. And because the new system permits invoices to be sent with deliveries, there is good reason to expect the company's cash flow to improve.

Diamond Meat slaughters about 400 head of cattle a day. A fleet of 22 trucks makes deliveries to markets and meat jobbers as far south as Los Angeles and north to Sacramento and San Francisco. With most customers buying twice a week, the company processes an average of 150 orders a day, Monday through Friday.

Cassette created off-line on NCR 260 terminal is later transferred to an NCR 399 mini.

The necessary paperwork is done on a 16K NCR 399 minicomputer and a free-standing printer rated at 125 line/min. Tape cassette input is prepared off-line on an NCR 260 terminal. The data input device also has a thermal printer which produces a proof copy for the operator

Starting about 2 p.m. and continuing until the job is completed at 10 p.m., orders from the office and six outside salesmen are keyed in on the 260. Since the orders have been forwarded from the shipping department where they were sequenced for routing, load numbers and stop numbers have been assigned.

Other data encoded onto tape cartridges includes date, customer account number, name, ship-to instructions, quantity, product code, description and the price. After keyboarding, the orders are returned to shipping and the weight for each line item is recorded as it is loaded. Then the orders go back to data processing.

The Small Systems User

Before invoices are generated, the original tape cartridges – a separate one for each route – are validated for account number and product code on the 399. Billing addresses are extracted from memory at this time, and prices are checked against the figures stored there. Any price deviations are printed out on a journal in the 399 platen.

In response to the operator's direction, the computer requests 399 keyboard input of the weight for each line item. This is checked for an allowable plus or minus variation of 10% against the table in memory. Sometimes, Oaks explained, customers phone in additions to their orders; this step makes sure any line item increase is accounted for.

The computer makes all price extensions and triggers production of five-copy, carbonless paper invoices on the free-standing printer. Three copies are retained in the office and two go with the driver, one for the customer and one to be signed and returned.

At the same time the invoices are printed, a fresh tape on the second cartridge handling station of the 399 is encoded with the complete record of each order. The next morning, these cassettes are processed to derive the detailed sales report for management and to update the accounts receivable file. The

(Continued on Page 51)

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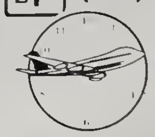

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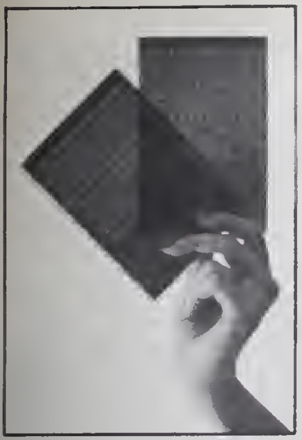

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COMPUTERWORLD
THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

Energy Crisis Boon to Wholesale Grocer

LAWRENCE, Mass. – The energy crisis has actually helped some businesses and for some, the increased business has led to computerization.

Maroun Bros, a wholesale grocer which serves more than 300 "mom and pop" convenience stores with canned and boxed goods, frozen foods and dairy products, is a case in point.

Business has picked up now that many people drop into the local stores instead of driving further to larger supermarkets. And Maroun has had to install a small computer to keep up with its increased volume of business.

The company's growing clientele required an economical approach to records management. "We also needed to add inventory control and a comprehensive order catalogue. Basic/Four gave us these," said Charles Maroun, company president.

Maroun selected a Basic/Four Model 350, with a CPU, CRT terminal and printer. The system performs order entry invoicing, inventory control, accounts receivable, payroll and accounts payable.

"The Basic/Four inventory control procedures have virtually eliminated out-of-stock conditions in our 70,000 square foot warehouse," Maroun said.

Maroun is also able to provide its small retailers with basic business information to help them manage their businesses. Each customer's bill furnishes suggested retail prices and profit percentages.

The small business computer prepares a 125-page catalog twice a month. The catalog lists items by number, gives a description of the item, the number of items contained in a package, the cost and the suggested retail price.

Slaughterer Beefs Up Daily Sales Analyses

(Continued from Page 48)

latter tapes provide the open line-item input for the weekly statements.

"Previously, we inserted copies of the invoices for the week when we mailed the statements," Oaks said. "Since we have many customers who pay by invoice, sending them out with the orders will probably speed cash flow. We've only had the new system for two months, however, so it's too early to pinpoint this precisely."

The office manager said off-line preparation of input data on magnetic tape entailed an investment that was only one-third of what would have been required for punched cards. Moreover, since the tapes are read in at the rate of 750 char./sec, the process is faster than card input.

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Wang Users 'Swap' Software Programs

Societies/ User Groups

TEWKSBURY, Mass. – Users of Wang equipment have a forum where they can exchange ideas and get helpful hints. The Wang user group, known as the Society for Wang Applications and Programs, or "Swap," is based on a sharing or swapping of software between users of Wang equipment, according to Jason R. Taylor, Swap executive director.

The main purpose of Swap, he said, is to make available the most powerful, extensive and useful multidisciplined Wang program library possible, by user-user swapping.

"Swap also provides direct user feedback to Wang Laboratories concerning both equipment and programs," Taylor said.

Membership in the user group is open to any owner or user of Wang equipment.

Two Types of Membership

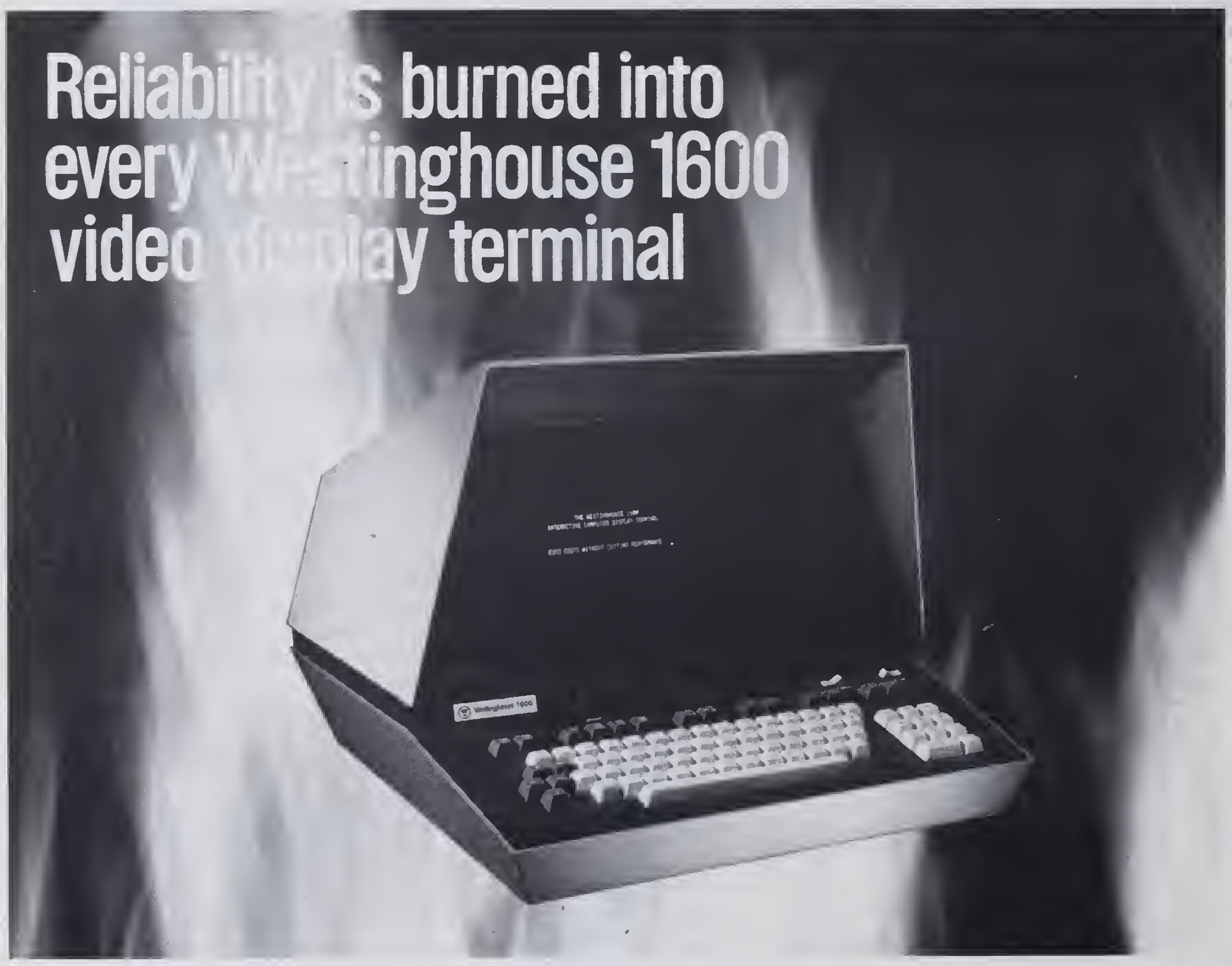
There are two types of membership. An installation member is a user who is immediately concerned with the operation of a Wang system. An organization may appoint one installation member for each Wang system used. The membership fee is $15 a year and these members are entitled to vote on all Swap policies and on the election of officers.

The second type of membership is the individual member. This is for either someone employed at an installation owning Wang equipment, but who is not an installation member, or for an individual with a direct interest in Swap or Wang equipment, but who is not an employee of an installation owning Wang equipment. Individual membership is $5 a year.

Several Special Interest Subgroups (SIS) have been formed to promote common interests. These include SISs in accounting, agriculture, automobile sales, income tax, electrical engineering, medicine and real estate, among others.

Communication among members is maintained through *Programmer,* the group's official newsletter and through an annual symposium, Taylor said.

Further information on Swap is available from 836 North St., 01876.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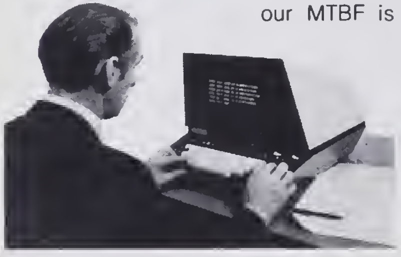

Conference Examines Computer Graphics

CHICAGO – Computer-based printing management systems; computer-based text processing and composition; the fundamentals of mailing list computerization; and mailing list services and distribution system developments are the four concurrent programs of the 1974 Graphic Communications Computer Conference here, May 15-17.

Computer-based production planning and loading, data collection through optical mark reading and computer-based production analysis will be covered in the management program.

Case Studies

The text-processing and composition program will feature several case studies including data base design concepts, publishing by facsimile transmission, and OCR input and electronic composition for multilevel mathematics and other tasks.

The third program is a tutorial design for printing firms wishing to take advantage of the opportunities for customer service through computer-based mailing list management.

Distribution system developments and mailing list system case studies round out the fourth program.

Registration for the conference at the Hotel Ambassador is $110 for GCCA members, $165 for nonmembers.

Further details are available from Norman W. Scharpf, GCCA, 1730 N. Lynn St., Arlington, Va. 22209.

APL Users to Convene

ANAHEIM, Calif. – The Association for Computing Machinery will sponsor the Sixth International APL Users Conference, May 14-17, at the Sheraton Hotel here.

The conference will consist of several sessions, concentrating on enhancements, extensions, applications, programming techniques, instructional methods and the future of APL.

A display area is planned, featuring demonstrations of APL-oriented hardware, software and application packages.

Registration is $15 for students, $40 for professionals.

Further information is available from John R. Clark, Orange Coast College, Costa Mesa, Calif. 92626.

IEEE Catalog Available

LONG BEACH, Calif. – The IEEE Computer Society Publications Catalog is available free of charge from the Computer Society, Publications Office, 5855 Naples Plaza, Suite 301, 90803.

NCC Pact Needs Ratification Also

Afips Business: DPMA,IIA Membership

By Toni Wiseman
Of the CW Staff

MONTVALE, N.J. – Two hot items on the business agenda for the American Federation of Information Processing Societies (Afips) executive board meeting this week are the possible memberships of the Institute of Internal Auditors (IIA) and the Data Processing Management Association (DPMA), according to George Glaser, Afips president.

Part of admitting DPMA to Afips will be a revised NCC agreement, he said, that will bring DPMA into the sponsorship of the National Computer Conferences on a basis fully equivalent to that of ACM and IEEE/CS.

The board of directors will also be asked to ratify that new agreement and simultaneously the ACM Council and the governing board of the Computer Society and that of the Soceity for Computer Simulation will also be asked to ratify the agreement, on disbursement of profits from the NCCs.

DPMA's application for membership, Glaser noted, is still subject to ratification by its international board which will meet in late June. "But again," he said, "we are most hopeful that they will ratify it."

Status Report: Societies

"Two votes are needed to admit a new member to Afips," Glaser said, "so we will vote at this board meeting on Saturday, May 11 and again at the board meeting probably in November."

In other new business, a new Afips committee has offered the technical assistance of Afips volunteers to the Federal Reserve Board. This Special Committee on Electronic Funds Transfer is chaired by Dr. Bernie Galler of the University of Michigan, Ann Arbor.

The Federal Reserve Board, Glaser said, is considering modification to Regulation J, which concerns the transfer of funds among banks, in view of possible large-scale electronic funds transfers.

"Afips will not campaign for or against any particular piece of legislation," Glaser stated, "but we will indeed make available to the Federal Reserve Board the best technical talent we can muster to aid them in their deliberations."

Two other items on the agenda are the second USA/Japan Conference scheduled for Tokyo in August 1975, and the possible establishment of a Washington, D.C., information office.

The purpose of this satellite office, he said, is to collect information on the Washington scene on behalf of Afips constituent societies, and in turn to provide information to governmental units.

"Afips is financially healthy, based on a successful meeting in New York last year," Glaser said, "and we have every reason to believe that the Chicago meeting will also be successful."

"We're paying special attention to ways in which we can be responsive to the needs of constituent societies and have strengthened the channels of communication between us and them," he added. "My only measure of whether that is working or not is the attitude of the board of directors. And I believe we have a very good board of directors and one that's working well together."

ACM Sees Brighter Future

BUFFALO, N.Y. – "ACM is about to start on a period of fairly considerable growth," President Anthony Ralston predicted.

"For the first time in some years our financial picture is good and we have resources to do things which we have not been able to do in some time," he said.

In particular, he said, he expects some considerable changes in the ACM publication effort over the next couple of months or year, involving more of a drive to orient the publications to the needs of the society's members and expand the publication effort in general.

"We are probably going to establish a small European secretariat over the next six months or so, most likely in Geneva," Ralston said, "for the purpose of better serving our members in Europe."

ACM has completed joint membership agreements with a number of societies in the past year, he said. The most notable is with the IEEE Computer Society, but four or five others have been concluded with organizations around the world.

"ACM is more and more involved with all sorts of outside activities," Ralston commented, "including, for instance, our involvement with the ICCP."

Ralston also mentioned the establishment of a new Special Interest Committee, Sigmini, in the area of minicomputers.

In the last year ACM established a second annual meeting, with sponsorship of the Computer Science Conference.

DPMA Keeping Active While Awaiting Word

PARK RIDGE, Ill. – While anxiously awaiting the outcome of the formal balloting for its admission to the American Federation of Information Processing Societies (Afips), the Data Processing Management Association (DPMA) is not sitting idle.

Afips membership has been approved by the DPMA Executive Council and is being recommended for approval by the International Board of Directors, said Donn Sanford, executive director.

"Just reading the sentiment in the field as I travel, I'd say the chances are better than even that the vote will be affirmative and that we will join Afips," Sanford said.

Early in April, DPMA started a series of advanced instruction in management (AIM) seminars. These are being held in 13 cities, sponsored by 11 chapters.

"This is the first time DPMA International has been in the so-called seminar business in many years," Sanford said.

This year also saw publication of the first in a manager reference series on specialized topics of interest to DP management. This first one was on understanding computer contracts.

DPMA also has a major book in the works on data processing management and a second on systems for nonsystems people.

"Membership is probably the dark spot on the overall picture," Sanford confided. "We're down probably a thousand members from this time a year ago."

On the more positive side, Sanford said, the association is going to finish the year in the black.

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Binet System Supplies Visitors With Bicentennial Information

WASHINGTON, D.C. – With over two billion people estimated to partake in America's 200th anniversary celebration in 1976, the American Revolution Bicentennial Administration (Arba) has its hands full providing activity and event information to all interested planners throughout the country.

To carry out this service efficiently, Arba has set up a computerized, bicentennial information network (Binet) for the gathering and dispersal of celebration data.

Since its inauguration last summer, Binet has cataloged over 1,300 on-going projects related to the celebration in all 50 states, and in U.S. commonwealths and territories, according to network director E.K. Zimmerman.

Because the information service is online, he said, the requirements to hook up are quite simple.

"All that is required," Zimmerman explained, "is a telephone and a computer terminal. The terminal can be rented for $50/mo to $175/mo depending on whether the user wants a basic teletype or a CRT display with an automatic printer that operates at up to 30 char./sec." In addition, the total cost for Binet computer time ranges from $20 to $50 per hour, depending on usage.

"But," he emphasized, "the Binet information itself is for free."

Paul Brewster, Binet DP manager, explained that his organization catalogs information on bicentennial activities in a master filing system maintained by a Univac 1108.

"Its operation is handled by Computer Sciences Corp., and a portion of the programming and basic operating system comes from the General Services Administration. We're using their data management language (DML) for the software, but we're doing most of the writing."

Binet is part of Infonet, CSC's teleprocessing service, which has Binet access points within 600 miles of any part of the continental U.S. Special arrangements are being made to provide access points for Hawaii and the U.S. territories.

States Next Goal

Computer terminals have already been installed in Arba regional offices throughout the country, and the goal for the rest of 1974 is to set up terminals in participating state commissions. Brewster said, however, that private organizations planning to use network information will have to install their own terminals.

"Private organizations that want to get Binet service should apply to CSC, based in Los Angeles, for the teleprocessing service. Simultaneously, they should apply to Arba for the network service and data base access." Necessary information about terminals will be supplied at that time, he added.

Brewster foresees travel agencies, hotels and restaurants as typical private users.

Arba has been given the responsibility by Congress for preparing a master calendar of local, state, national and international events of significance during the bicentennial period.

Univac Signs Up

BLUE BELL, Pa. – Sperry Univac has become one of the first industrial companies to go on-line to the American Revolution Bicentennial Administration's Binet system.

A Sperry Univac DCT-500 data communications terminal with an output printer has been installed at the World Headquarters building here to provide management and visitors with information on the bicentennial activities.

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Roy N. Freed, a leader in this field.

Roy Freed has specialized in computer-related legal matters for many years. He has served as inside counsel for a major manufacturer of digital computers, and is currently engaged in private practice with a prominent Boston law firm.

He has authored many articles on the various legal aspects of computers – including "Computer Frauds – A Management Trap" *(Business Horizons)* and a book entitled "Computers and Law – A Reference Work." Mr. Freed will personally conduct the entire seminar.

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Time-Sharing Pioneers Gather For 10th Anniversary Celebration

CHICAGO – Armed with the belief that learning to use computers would become as necessary for students as learning the alphabet, two Dartmouth College professors set about to bring computing power to as many students as possible.

Just 10 years ago, Dr. Thomas Kurtz and John Kemeny inaugurated the Dartmouth Time-Sharing System (DTSS), and this week's National Computer Conference here will celebrate the anniversary in a special three-part session.

Professors Kemeny and Kurtz strongly believed that computers could be used by students and used well by many if the equipment were available.

This belief was based on the fact that when they bought a small LGP 30 in 1959 for their math students, the students were programming better than the pros.

Something for Everyone

Bolstering their philosophy with a grant from the National Science Foundation, Kemeny and Kurtz pursued their ultimate goal – computing for the entire population of Dartmouth College: a system that would be suitable for use by students, administrators and faculty.

The heart of the early time-sharing system was a GE-265. The system was upgraded to a GE-635 in 1967, when the demand for DTSS outgrew the capability of the GE-265.

In order to make the system truly available for the diversity of "users" on campus, Kemeny and Kurtz developed a language which was easy to learn and easy to use – Basic.

The two professors and a staff of student assistants worked assiduously, sometimes as much as 50 hours a week, in addition to carrying a full academic load in the early days of developing the system.

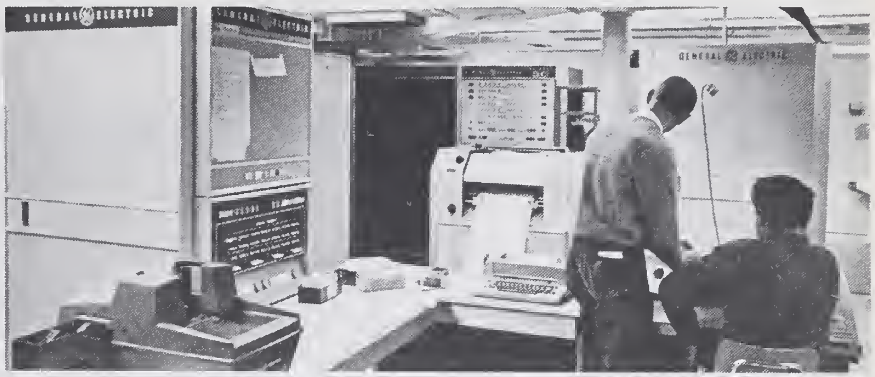
At 4 a.m. on May 1, 1964, DTSS solved its first problem. And it wasn't long after that other colleges and secondary schools all over New England tied into their system, the first education network.

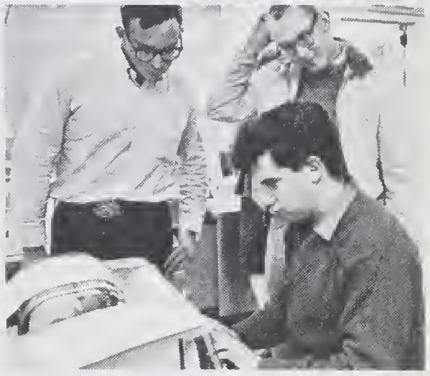
The special NCC session on May 8 will feature Dartmouth President Kemeny, and Kurtz, director of the Kiewit Computation Center at Dartmouth. Joining them as copanelists are those student assistants who contributed significantly to the project.

The first portion of the special session, a panel entitled "The Users Speak," will discuss several important ways in which an integrated information processing system is used in an educational environment.

The second panel, "Behind the Scenes," will emphasize the solutions and techniques employed in DTSS relating to reliability, security and performance measurement and evaluation.

Kemeny and Kurtz will cochair the third panel, "Reminiscences of Its Genesis," and look back on some of the events which accompanied the birth of DTSS, such as finding that their system emitted the same frequency on which the local fire department operated forcing them to shut down every time there was a fire.





In the Old Days...

Dr. Thomas Kurtz and student assistant Mike Busch (above) survey their early work on the Dartmouth Time-Sharing System in the old computer room at College Hall. Original student time-sharing users (right) are among the invited panelists at the Dartmouth celebration taking place this week at NCC.

City Has Time to Sell To Pay For 370/135

CW West Coast Bureau

GLENDALE, Calif. – To help defray costs of the purchase of an IBM 370/135, the city is offering time to private businesses, and so far has one customer.

The effort is strictly soft-sell, since the city council resolution authorizing the sale of computer time specified that the city must not compete with local service bureaus.

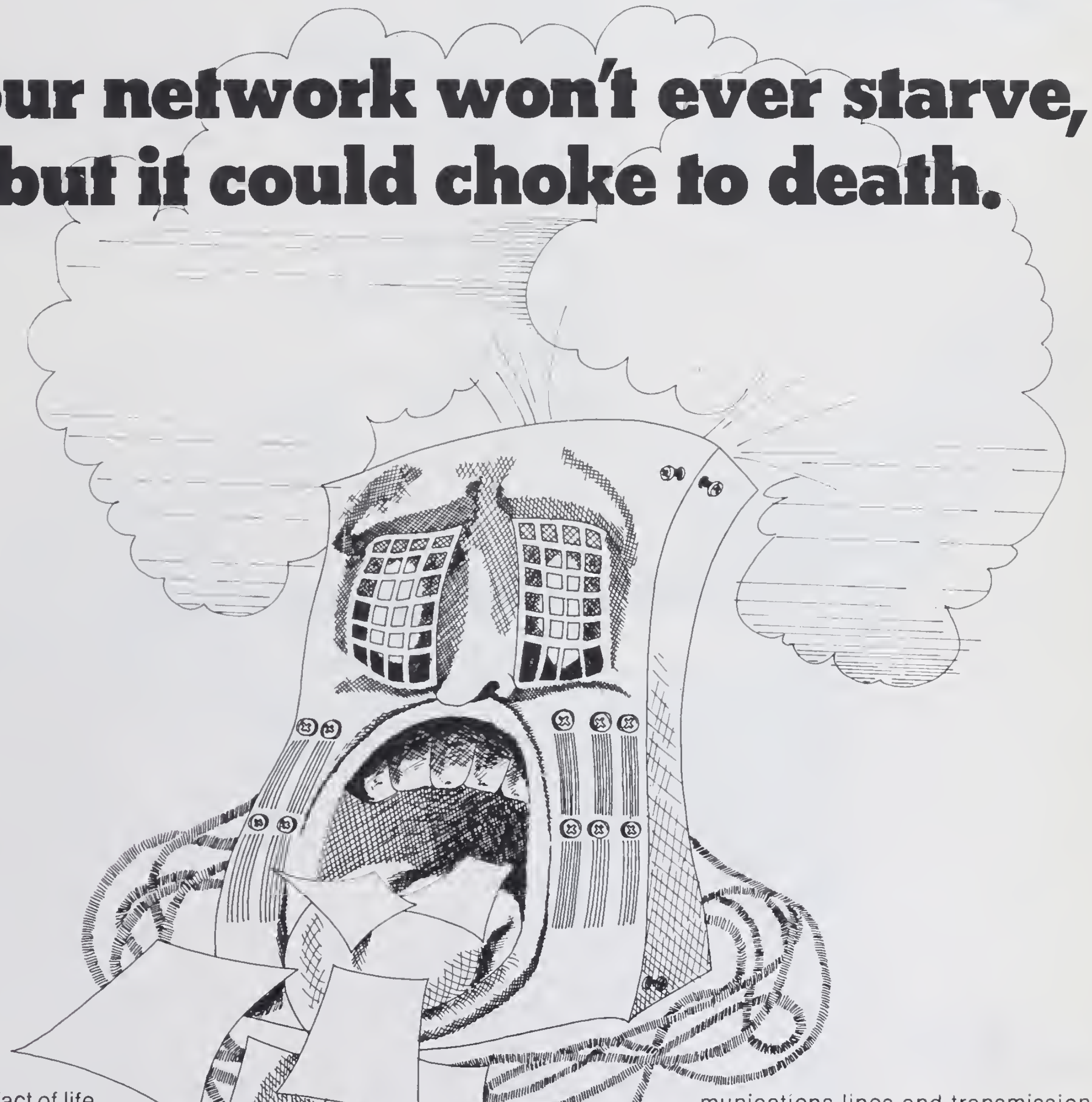
"We haven't been pushing hard," said Robert R. Jorgensen, EDP director, who said the city has a marketing agreement with Stat-Tab.

The city uses the 135, which it has had for a year-and-a-half, primarily for utility billing, city accounting functions and an on-line police system.

The city's first customer is an insurance company, which is using the 370 to prepare for the acquisition of its own 135. The time offered is from 10 p.m. to 6 a.m. daily and every weekend.

The city uses the computer fully during the day, Jorgensen said.

'Ah Yes, We're Expanding Rapidly'



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But Training, Retaining a Bone of Contention

Everyone Agrees: People Key to Successful DP Shop

By Nancy French
Of the CW Staff

BOSTON – Personnel training and career development are hot topics in the DP industry, a Caravan session here recently emphasized.

While Frank Malatesta, Paul Ladd and Jeffrey Langmead all agreed on the importance of "people" in a DP shop, they sharply disagreed on the best way to train and retain those people.

Ladd, representing the Worcester County National Bank, maintained the best way to build "a top-rate team" was to evaluate the strengths and weaknesses of existing staff members, and recruit to fill the gaps. "Then hold onto your people," he suggested, "by offering good in-house training opportunities and a chance for promotion and good salary increases within the company.

"But before you can even begin recruiting," Ladd said, "a smart company determines if its salary structure is competitive."

'No Surprises'

Malatesta, a personnel administrator for Polaroid Corp., emphasized that the key to happy employees is making sure they know "where they stand" with the company. Also, they must have a clearcut idea of their personal goals and how these mesh with those of the company – with "no surprises."

Spotlight on Personnel

Disagreements among the panelists seemed more a matter of degree than ideology.

Malatesta's recommendation for annual written evaluations and periodic discussions of performance was countered by Langmead of Blue Cross/Blue Shield, who agreed with the "no surprises" approach, but who insisted that an employee must know "day by day what you think of his work."

Once a year is not enough, he said.

Personal Evaluation

Ladd, too, supported a less formal but more frequent and personal style of performance evaluation.

"I tell a man every day what I think of his work in one way or another," Ladd said.

Langmead believes Ladd's principle of hiring people at entry level, training them in-house and giving small periodic salary increases, is ineffective. He said, "I don't want to train people in-house. If you do, you hire a trainee at $7,000, train him for three years when he'll be worth a salary of $15,000, and then lose him to another company when you can only pay him $10,000 because of companywide salary rates.

"I'd rather hire a superstar, pay him $15,000 if he's worth it, regardless of what the rest of my staff is getting paid, because I believe in paying people what they're worth.

"If an old employee complains," Langmead continued, "give him a raise, if he's worth it, but if he's not, tell him so and let him go elsewhere."

"It's a wonder your shop hasn't fallen apart," Malatesta commented.

Odd Man In

Moderator Dr. H.R.J. Grosch pointed out that a stratified system as described by Malatesta would serve about 90% of all employees, but there ought to be an alternate route for those who don't fit into such a mold – the point being that many of those "odd balls" are very creative, valuable people.

"There ought to be one trap door for superstars and another for 'substars,'" he added.

On the issue of career patterns one participant suggested it was wrong for all operators to aspire to be programmers because the money was better.

Another participant said a means of avoiding that situation would be to pay better salaries for positions concerned with center management – such as shift leaders and schedulers. This would encourage people to stay in jobs where they perform best.

The session closed with a discussion of whether industry was becoming more "people-conscious."

Langmead stated that programmers needed no special treatment. "Rather than worrying about any tendency to treat programmers as clerks, maybe we should learn to treat clerks better," he said.

English Dropouts Get Help Choosing Career

Special to Computerworld

CHESHIRE, England – Working in conjunction with the Cheshire County Council, IBM UK has put into operation a computerized careers guidance system to help school dropouts decide what they will do with their lives.

Currently being evaluated at two schools, the system is offering help to 800 students. Based on the "developmental theories of career choice" developed in the U.S., the project is geared to the premise that choice of career is concerned with the answer to the question, "What sort of a person do I want to become?" as well as to earning a living.

Personal Profiles

IBM 3270 CRT terminals at the schools are linked by Post Office telephone line to an IBM 370/145 computer. Students have access to a data base of 300 careers and are shown details which help them develop profiles of themselves in terms of likes and dislikes about life in general.

Printouts can be obtained of any aspect of a career possibility allowing for amendments suited to personal ideas. The data base is based on a system of classification developed at Leeds University and titled "Spedcop."

There are eight career analyses covering surroundings, prospects, entry and training, effect on individual lives, type of work, conditions, organization characteristics and people relationships.

Interest fields are also identified, and careers are analyzed in terms of six areas of responsibility – from the professional to the unskilled worker. The system can hold eight profiles for each student.

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NSA Overcomes Reluctance for In-House Training

Spotlight on Personnel

WASHINGTON, D.C. – Firms that hire liberal arts college graduates for positions as programmers and systems analysts after an on-the-job training program generally find a large obstacle in the reluctance of supervisors to free their trainees for classes.

But by tying promotion to the professionalization program, the National Security Agency has ensured that its work force is given the opportunity for the training it needs to keep up-to-date, according to Richard Wille, executive of the computer systems career panel for NSA.

"Many supervisors are reluctant to allow an employee to take time off to increase his knowledge unless it is of immediate use on his current job," he explained.

'Reluctance Overcome'

"This program has helped overcome this reluctance and provided the incentive to the employee to seek additional training in his career field."

The NSA has a three-year intern program for liberal arts graduates with a minimum gradepoint average of 2.5 and also offers its "on-board" personnel an opportunity to enter the intern program.

Intern applicants are tested for programming aptitude and for probability of success in the overall computer field and are required to give some indication that they have an aptitude in some other agency career field, Wille said.

Each intern has an adviser, and the program is tailored to his needs and interests.

During the three years, an intern must complete a number of requirements, most of which are designed to be performed as part of his work assignments.

He has three work assignments exposing him to at least three different aspects of the computer field, and must write at least one major program in each of four languages.

Course Load

The intern takes a minimum of three college-level math or computer science courses and takes, or has taken, a basic college math course as well as probability and statistics.

He must also write an acceptable 2,000-word technical paper and pass the Computer Systems Professional Qualification Exam, Wille said.

"On-board" personnel, such as in operations, may also complete the professionalization course, but it normally takes them five to eight years.

These people need to accumulate 1,000 points, write the paper, at least one major program and pass the test. Points are given for college education, training in the NSA school or other technical schools, work experience in computers and related fields at NSA and professional achievements, he explained.

Paraprofessional Program

Last year the NSA started a paraprofessional program for operators, with on-the-job training and schooling required. The program includes seven courses, five with two different kinds of computers.

The agency is planning a production control program, and is talking about instituting a program for a higher level of professional certification to keep professionals involved in the ongoing training programs, he added.

Mobile Medical Unit Performs Checkups

ROCHESTER, Minn. – Computerized physical examinations were recently administered here by the Health Testing Services, Inc. of Minneapolis.

Using what is referred to as a Computa-Lab Mobile Health Testing Center, the HTS medical technicians oversaw automatic blood pressure tests, heart ECGs, urinalyses, X-ray analyses and other routine health checkup procedures that took under an hour per patient. The mobile unit's computer carried out and evaluated the results of all tests after the technicians readied patients for the checkup.

The service, which was experimentally tried out on members of a local engineering union, does not require the presence of a physician.

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As Overtime Work Grows

UK Computer Operators Seen Resisting 'Shift' Rules

By Joseph Hanlon

Special to Computerworld

RICHMOND, Surrey, England – Computer staffs here are doing more shift work and overtime as firms try to squeeze more performance out of expensive and rapidly depreciating equipment.

Unlike blue-collar workers, however, the white collar computer operators do not have a long tradition of shift work and they don't like the extra work.

These conclusions from a new study, "Shift Working and Overtime Practices," are based on a survey of 152 medium and large computer users in the UK.

Compared with a similar survey conducted four years ago, the report noted that "shift working has continued to increase and the practice is now almost universal in medium to large commercial installations." All but one of the respondents operated a shift system.

But it is not just that more installations work more than one shift. "The trend is for more staff to become involved in increasingly intensive shift patterns, most usually caused by increases in workload."

The percentage of installations working 24 hours a day, seven days a week, doubled in four years to 8%. But they are the larger installations, with 17% of the staff of those surveyed. Five-day-a-week, 24-hour-a-day coverage is provided at an additional 69% of the installations, with 73% of professional (programming and operating) staff.

> *". . . In many cases shift working is not accepted as the norm, but rather as an obligatory apprenticeship prior to progression into 'more normal' office work . . ."*

In general, the operating staff, not the programmers and managers, work shifts. A few keypunchers, tape librarians and data control staff also work shifts.

Five-day-a-week shops tend to work on a weekly or fortnightly shift rotation; seven-day-a-week installations all have a more complicated rotation with only a few days on each shift.

The main compensation for shift work is extra money – 25% extra is common, either in the form of extra to everybody or a 25% bonus for the evening shift and 50% for the night shift. Indeed, one problem noted by the survey is that some shiftworkers earn so much extra that they have to take a salary cut if they are promoted to a nonshift job.

Shift Working Unpopular

Despite the extra money, shift workers are unhappy. When employers were asked about problems, "the most frequently cited topic was that of recruitment and retention, emphasis being placed particularly on the difficulty of persuading staff to remain on shifts after a period of two or three years." The biggest problems were in the seven-day shops.

"This demonstrates clearly the distinction between shift working in data processing and more traditional blue-collar environments where liability to shift working has become institutionalized," the survey noted.

In blue-collar environments "shift working is built into the 'job expectation' and in many cases the organization of the whole community has been modified accordingly. However, in many organizations the computer operating group is the only 'office staff' employed on shifts."

Spotlight on Personnel

The survey pointed out that "in many cases shift working is not accepted as the norm, but rather as an obligatory apprenticeship prior to progression into 'more normal' office work in the systems and programming functions, which are widely regarded as the only possible long-term career opportunities."

Only one-sixth of the shift and overtime working agreements were set up in consultation with trade unions and staff associations – the rest were determined by management. But the report found that "unions such as the National Union of Bank Employees are now setting up specialist committees to study the specific problems of white-collar shift and overtime practice, and are likely to include these subjects in further negotiations."

In general, higher salary is the only benefit that shift workers get. Because there are often so few computer staff at night, little is done about food and transportation, even in areas where public transportation is commonly used and not available late at night. For food, the most common provision for computer staffs is some sort of do-it-yourself-facility. But others offer prepacked sandwiches or

(Continued on Page 59)

A powerful, productive Key-to-card Data entry System.

Tab Punch/Verifi

Programming 'Social' as Well as Individual Activity

By Molly Upton
Of the CW Staff

BINGHAMTON, N.Y. – "One of the main reasons for lack of success in teaching computer programming is the failure to recognize the diversity of the task," according to Gerald M. Weinberg and Edward L. Schulman of the State University of New York here.

"Computer programming is an individual as well as a social activity, in short, a human activity," they said.

Recounting the techniques used to teach programming to students who range from novice to experienced programmers at the School of Advanced Technology (SAT), Schulman and Weinberg emphasized that the objectives of a specific program should be clearly stated and understood.

Working toward assumed objectives, or those qualities of a program that the programmer believes to be important, "can be an asset but more often than not, turns out to be a liability," they said in a recent paper.

"We often wonder how many projects are behind schedule because of the programmer who can't get his/her 'fast subroutine' to work in a program to be used every six months."

Spotlight on Personnel

Programmer attributes they have found that can significantly affect or even define program and programmer "quality" include:

- Language flexibility knowledge of programming as well as languages; ability to learn new languages and new language features.
- Problem-solving ability – communication skills, ability to draw out the definition of a problem, heuristic skills, etc.
- Dedication.
- Programming speed.
- Ability to meet deadlines.
- Pays attention to detail.
- Perspective.
- "Ego-less" attitude – teaches and learns from peers, can give and take criticism.

Each of these programming goals often conflicts with the others, they noted. "Understanding their relationships and relative importance in a particular project should dictate the degree of effort directed toward meeting one more faithfully than the other," they said.

The courses at SAT incorporate a desire to change behavior rather than to simply impart facts.

In the introductory course, in which both APL and PL/1 are taught, the students are taught the techniques of "structured programming" in order to learn "program readability."

"Reading programs" is the single most effective way to broaden their skills in debugging, their understanding of new features of a language, their concept of what other programs and programmers are doing, and their awareness of good or bad programming style," they said.

A methods and applications course, designed as a "perception" course, focuses on the interrelationships of algorithms, hardware, data structure and rules.

The students work in three-person teams, reading and criticizing each others' code, learning from others' mistakes.

In the heuristic problem-solving course, the goal is to develop creative attitudes toward problem solving. In addition to problem definition, the students are also confronted with the need for problem resolution.

Programming 1 uses PL/1 as the language.

Many students enrolled in Programming 1 already have programming experience. In order to convince the students they too have something to learn, the instructors "intimidate the student on his/her terms – through programming."

Here the instructors rigidly insist that projects must be "correct" and completed programs returned to students until they are correct. "In teaching over 300 professional programmers, not one has ever handed in a perfect program on the first try," they said.

Students then proceed to work in the team environment in which they examine each other's and the instructor's programs.

Ease of modification is demonstrated by having each team take another team's "working" program and try to modify it. Also, each team has to modify its own program after it is halfway through another problem.

Shift Schedules Irk UK Operators

(Continued from Page 58)

cold meals. And one depended on the "Chinese chip shop over the road."

Shift work presents special problems for women. More than 60% of the firms surveyed simply did not employ women on shift work. Half of those who employed women on shift work restricted them in some way; the two most common limitations being an earlier quitting time and requiring either two women on a shift or not permitting one man and one woman alone.

The result is to effectively exclude women from one of the important career paths in the computer industry. Of the firms surveyed, for example, only one-quarter has female operators. The report noted this could be a much more serious problem when antidiscrimination laws come into effect.

The report is available from Computer Economics Ltd., 1 St. James Cottages, Richmond, Surrey, England, for about $24.

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Toward More Practical Preparation

All Involved Must 'Come Together' to Upgrade Training

By Molly Upton
Of the CW Staff

SAN JOSE, Calif. – Industry, colleges, manufacturers' schools and private DP schools should "come together and agree on a system of DP education that is mutually beneficial to the educators, the potential students and the industry as a whole," according to Gopal K. Kapur of the School of Business at San Jose State University here.

Kapur's corollary to Gresham's law ["Bad money drives out good"] indicates the pressing need for upgrading personnel training in business data processing. The corollary states: "Because of their enormous number, poorly qualified programmers and analysts circulate more freely than – and will eventually replace – their well-trained counterparts."

Although making DP courses in colleges more comprehensive and oriented towards practical use in business is also needed, more immediate returns can be gained through in-house training, he said. Kapur is speaking on DP education at an NCC session this week.

In-house training as widely practiced is in many ways similar to preparing "instant potatoes," Kapur said.

"What you get is a substandard product; in fact, you have created the 'instant programmer.'"

Sink or Swim

Many places select programmers from employees or applicants on the basis of an aptitude test and have them attend a two- to three-week class given by the computer manufacturer. They are then placed in the DP department to start programming, he said.

During this training the student learns how to code – not even to code well – with the main emphasis on programming languages, while the basic DP concepts are overlooked, he said.

While recognizing that at many firms it may not be possible to institute formal training programs, "most installations will need to develop some type of organized approach if they are to survive the increasing shortage of well-qualified data processors."

DP Education: Acute Crisis

For instance, he said, firms could:

- Conduct formal classes in areas that tend to be formalized, such as programming languages and introductions to hardware and software.
- Hold informal one- or two-hour workshops once a month to deal with topics of limited relevance to most DP employees, such as program debugging or use of certain utility routines.
- Invite experts from other companies, consultants and qualified DP teachers to discuss various topics such as data structures and file organization techniques.
- Hold occasional seminars for which students prepare different topics.

"In-house training requires considerable thought, planning, and commitment by the top executives, time and effort by the DP staff and inevitably, a definite financial outlay.

"However, such efforts will pay big dividends . . . " Kapur said.

Colleges Best Source

In the long run colleges and universities are the best means of producing well-qualified DP professionals, Kapur noted, stressing the need for interaction between the business community and colleges and universities to improve their DP curricula.

The DP community should help, through whatever means necessary, by setting up scholarships, contributing expertise, excess computer time and/or financial aid to establish business DP curricula and adequate facilities in colleges.

Colleges should seek advice and help from the industry in designing courses, he suggested, even to the point of hiring knowledgeable people from the industry.

"One of the greatest enigmas is the gross failure of colleges and universities to involve themselves in the development of business data processing science," he remarked.

Courses need to concentrate on business DP systems design, analysis methods, programming logic and techniques, business math, data structure, as well as equipment selection and software evaluation, he said.

Many colleges currently have computer science departments that are oriented towards the engineering and scientific uses of computers.

Industry should also offer programs giving college teachers firsthand experience in business DP, through in-house training during the summer and occasional workshops, Kapur said.

Upgrade DP Schools

The data processing community also has a role to play in upgrading the education available in commercial DP schools, by drawing up workable standards for private schools which should be made available to the public, vocational counselors and the press, Kapur said.

The DP community should also indicate to these schools their future and current job requirements for trainee level personnel.

Kapur found the private DP schools try to "teach too much too fast to students who are simply not qualified. . . . The main emphasis is on theory, and very little is placed on the practical side of business DP expertise."

Students in these schools, he said, generally do not receive much preparation for the actual business environment for which they are heading.

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Mini Rides the Rails To Figure Track Wear, Plan Maintenance

CHICAGO – A computer is "riding the rails" for the Atchison, Topeka and Santa Fe Railway Co. here to determine wear and tear on railroad tracks.

The computer, a Data General Nova 1220 mini, is used with a sensor system to gather and process data that helps Santa Fe's track engineers plan track maintenance.

In operation, a "track geometry car" uses optical encoders and contact feelers that measure warp, surface of rails, gauge, superelevation, rail alignment and lateral and vertical acceleration.

These measurements are then converted to electrical signals for transmission to the recording equipment inside the car. Moving at normal railroad train speeds – up to 80 mile/hr – the car takes measurements with the track in a dynamically loaded state, lending a greater degree of accuracy to the resulting data, a spokesman noted.

Voltages transmitted by the measuring equipment are received by two parallel sets of instruments. One produces traces on an analog strip chart; the other feeds data to the computer. Additional data such as mileposts, distances and key landmarks are entered through separate analog channels to geographically "position" the track measurement for future maintenance efforts.

Tracks Rated

On board the moving track geometry car, the Nova 1220 monitors incoming data channels, stores the information on fixed-head disk and magnetic tape, and issues reports of priority locations – those areas that need immediate attention – with a 500 char./sec line printer. The printer also produces one-mile summaries of each type of defect and an overall rating index for each mile of track covered.

Inside the car, a Santa Fe maintenance-of-way supervisor monitoring the printouts can immediately notify local repair personnel of priority locations. If a section of track is given an unsatisfactory rating, the roadmaster can stop to make an on-the-ground inspection.

The data acquired by the minicomputer and stored on magnetic tape is eventually processed off-car and compiled into a master track file to be used for planning long-term maintenance programs and rebuilding.

The Santa Fe also plans to use this information to determine performance of cars traveling at different speeds, operating levels for maximum passenger comfort and guidelines for the design and maintenance of future railroad cars.

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CI Notes

ICL to Join CPI

NEW YORK – International Computer Ltd. (ICL) intends to join Control Data Corp. and NCR as an equal partner in their joint venture firm, Computer Peripherals, Inc. (CPI).

The enlarged CPI would include the establishment of combined research and development facilities within the UK. CPI currently has four plants in the U.S. for manufacture of peripherals for its parent companies.

The agreement in principal calls for an investment by ICL of about $20 million.

Honeywell Minis Going Turnkey?

WELLESLEY, Mass. – Honeywell appears to be ready to market some of its minis as turnkey systems for specific applications, following the trend set by Hewlett-Packard. Announcements of Honeywell turnkey systems are expected sometime in June.

Penny Automates Catalog Orders

HOUSTON – Texas Instruments, Inc. has received a contract from J.C. Penney Co., Inc. for 800 computerized order-entry terminals and four pollers to be used for a catalog order-entry and communications system.

Each in-store terminal consists of a Silent 700 Model 733 terminal, Model 960A mini with 8K words and a modem for 1,200 bit/sec transmission.

Amminet Uses Hazeltine CRTs

GREENLAWN, N.Y. – Remote Computing Corp. has contracted with Hazeltine Corp. for the lease of 250 Hazeltine 2000 CRT terminals for use in the Automated Mortgage Market Information Network. The Amminet system matches buyers and sellers in the mortgage market.

The contract contains an option for 150 additional terminals.

Residents Oppose IBM Copter Pad

RIDGEFIELD, Conn. – A group here has collected between 1,500 to 2,000 signatures to ask the town's zoning commission to bar a helicopter landing pad planned by IBM at a future training site. Ridgefield has about 18,500 residents.

The group, called Committee to Save our Serenity, claims Danbury airport is about five minutes away.

An IBM spokesman said the firm is "continuing to cooperate with the town in its study of the situation. We want to do the right thing."

Supershort

Computer Automation, Inc.'s Test Systems Division has received orders for 11 Capable Tester Systems from several mainframe and peripherals manufacturers.

Lessors, Maintenance Beneficiaries

GSA to Discontinue Sole-Sourcing of DP

By E. Drake Lundell Jr.
Of the CW Staff

WASHINGTON, D.C. – The General Services Administration (GSA) last week revealed it would discontinue its practice of issuing Federal Supply Service contracts with IBM, Honeywell and Univac for most mainframes.

The move would prohibit any government agency from contracting on a sole-source basis with those firms, thus opening up the government market to competition from leasing and other firms in the business.

In addition, the agency said it would also take most maintenance out of the contracts, thereby opening the door to independent maintenance competition on federal contracts.

GSA also said from now on it would treat conversion of rented equipment to a purchase base as a new procurement – thereby opening it up to bids from third parties.

The move – if carried out to its fullest extent – may serve to wean firms such as IBM and Univac from "easy" government contracts by requiring computer-using agencies to open up bidding on almost all computer procurements instead of sole-sourcing through the Federal Supply Schedule contracts, sources here said.

Lessors' Gain

Particular beneficiaries of the new rules, the sources said, should be computer-leasing firms which have been pressuring the government to remove computer purchases from the FSS contract system for years.

Revelation of the new ground rules came in a letter from M.S. Meeker of the GSA to James Benton, executive director of the Computer Lessors Association, which has been leading the struggle to get more open bidding, particularly in reference to IBM 360/370 systems.

The letter, in part, stated that the GSA will "discontinue ADP schedule contract coverage for:

"(1) All IBM System 360/370 equipment, including individual machines.

"(2) Honeywell H-200 and H-6000 Series, and G400 and G600 Series central processors.

"(3) Univac 1100 Series central processors."

In addition, the letter stated the GSA will "discontinue ADP schedule contract coverage for maintenance of government-owned equipment of the following manufacture: Burroughs, CDC, DEC, Honeywell, IBM NCR, Sperry Univac and Xerox."

It also stated that "conversion of rented systems is considered to be new procurements," from now on.

In the past, government computer users had been allowed to convert their rented installations to purchased installations without going outside for bids from such organizations as computer lessors or used equipment dealers.

The Computer Lessors Association, in a long-term fight with the GSA, had contended that such changes without competitive bidding had cost the government "millions" in unnecessary expenditures.

In the maintenance area, the GSA noted it would establish a Basic Ordering Agreement for firms offering maintenance, where each firm would have to list its prices for different classes of maintenance service.

Foreign Markets More Promising Than U.S., Cary Tells Meeting

By Molly Upton
Of the CW Staff

ST. LOUIS – IBM's market possibilities overseas are even more promising than in the U.S., Chairman Frank T. Cary told stockholders at the firm's annual meeting here.

"Many countries are only now beginning to use products like ours," he said. However, overseas markets are "not without their problems" such as inflation and nationalism, he added.

In a review of the events of 1973, Cary noted the change in the structure of World Trade Corp. was the result of the unit's success.

Since 1950, World Trade's revenues have grown from $51 million to $5 billion in 1973, and last year it contributed more than 50% of IBM's total revenues.

Cary called the System/3 the most popular computer in IBM's history, with over 20,000 installed as of the end of 1973.

For the future, IBM believes "much of the promise for the future of DP lies in the area of terminal systems."

In addition to technical achievements by IBM, Cary noted the firm is continuing to study means of protecting data through codes, etc., and said it is "equally important to discourage the collection of information not needed.

"Employers can do much to assure only necessary information is collected," on employee salaries and benefits, Cary said.

The year 1973 was "a very good year for IBM, with a record number of shipments and a backlog of orders larger than at year-end 1972," Cary said.

"With the severest effects of the energy crisis past, most economists believe the economy will overcome a soft first half and will be on the way to renewed growth in the second half. Based on this forecast and our own good first quarter report, we feel optimistic about the balance of this year," he said.

Cary reviewed the status of several lawsuits, and traced developments in the Telex suit.

"We are convinced the Telex decision was based on serious errors of antitrust law and misinterpretation of IBM's business practices," he said. "IBM has competed fairly and within the law, and it's on that basis that we are asking for the Telex antitrust decision to be reversed," he commented.

(Continued on Page 64)

Industry Groups Push Free Trade

By Nancy French
Of the CW Staff

WASHINGTON, D.C. – Representatives of the computer industry have called for legislation to help expand the export of U.S.-manufactured computers and peripheral equipment worldwide, including the Soviet Union and East European countries.

Speaking for the Computer Industry Association, A.G.W. Biddle charged that the "national security" has been used as an excuse for restricting the export of nearly every type of computer or peripheral equipment to East European countries.

"U.S. efforts at this time should be directed toward expanding peaceful trade with the Eastern Bloc, but present trade bills wouldn't encourage such moves," Biddle said.

Speaking on behalf of the Computer and Business Equipment Manufacturers Association (Cbema), Peter F. McCloskey, Cbema president, and Robert D. Klages, chairman of the Cbema Foreign Trade Committee and Counsel, Sperry Rand Corp., warned, "If we cannot adapt U.S. export control policy to the needs, U.S. participation in this market will be self-limiting. In that case, the need will be met either by internal development or from increasingly available alternative sources."

The three testified before the Senate Subcommittee on International Finance of the Committee on Banking, Housing and Urban Affairs.

Biddle criticized a bill under consideration saying it would "give the President authority to curtail exports by whatever methods of regulation he deems appropriate.

"The Export Administration Act is already fraught with too much secrecy, unresponsiveness and unbridled discretion," he said. "This proposal is so broad

(Continued on Page 64)

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Foreign Markets More Promising Than U.S.--Cary

(Continued from Page 63)

"If lowering prices to a 20% profit margin is considered predatory, our antitrust laws are being turned upside down. They were drawn up to encourage the kind of price competition that benefits customers."

"The central issue in the Telex case confuses the right of a company to take perfectly ethical actions in order to compete," he said.

"I don't think it's correct to narrowly define the market," he said, observing the market in the Telex case was limited to peripherals compatible with IBM central processors.

"We intend to fight and have faith in the ultimate fairness of the judicial process," he said.

IBM is a dynamic company, employing 274,000 people, Cary told stockholders. In 1973, the firm hired 12,700 new employees in the U.S., and a significant number were women and members of minorities. "IBM has an equal opportunity program shareholders can be proud of," he said.

During the question and answer period, Cary noted that during the last five years the percentage of domestic employees from minority groups rose from 6% to 10% and the number in management more than tripled from 300 to 945, while those in sales rose from 6% to 8%.

The number of women in management positions rose from 235 to more than 700 and in sales from 1.5% to 4.5%, Cary said.

Cary laid out some ground rules for the conduct of the meeting, directed rather specifically at Mrs. Evelyn Davis, who refers to herself as the number one minority stockholder.

Mrs. Scranton tries out Consumer Transaction Facility, as her husband looks on.

CW Photos by M Upton

Tom Watson Jr. enjoys meeting from vantage post in audience with codirectors Scranton, left, and Williams.

"I am not going to allow any personal remarks in this meeting. I warn you," he told her.

Undaunted, she retorted, "Frank, you're the first IBM chairman I've been able to get along with."

The meeting was notable for its lack of terse remarks from the chair.

Many Issues

Davis commented on a wide range of issues and nonissues, including the absence on the proxy statement of names of proponents of motions, possible political contributions by members of the board of directors, conflicts of interest by directors and theft of trade secrets.

Davis, wearing a New York Yankees baseball cap, also suggested that Henry Aaron be considered as a token nomination for a post on the board of directors, noting it was token because he didn't have a chance of gaining a seat. Cary accepted it as a recommendation to management.

Davis asked if any of the directors had been asked for contributions by either major political party. Cary said IBM as a firm had made no contributions at any political level and it hadn't asked directors if and how much they had personally made.

When asked about the transfer of trade secrets from IBM to other companies, Cary observed that IBM has tightened security but that it is trying to achieve a balance so that security is high enough to prevent leaks but not so high that it inhibits development.

South African Question

Within the last three years the presence of IBM in South Africa has come under scrutiny by various religious groups, and a resolution was introduced this year by the Domestic and Missionary Society of the Protestant Episcopal Church calling for establishment of an independent review committee appointed by the board to report on the situation in South Africa.

"The essential question is if IBM presence has positive effect on nonwhites" in South Africa, Cary said. He noted IBM has increased the number and percentage of blacks employed there from 4.2% in 1970 to 9.3% in 1974, with a total nonwhite employment of 11%.

"We don't say we are a great force; we believe we are a positive force." IBM is working with the government in running courses for urban blacks in typing, keypunching and computer operations, he said.

While IBM management opposes the church's motion, the disagreement with the Episcopal Church is a "matter of degree" as it feels the review committee would duplicate the company's efforts, Cary told the meeting.

A motion by the National Council of Churches called for publication of information on employment of minorities, women, etc., in nine occupational categories for the past three years. The proposal also asked that data on local operations be made available.

Cary said management opposes this because it could lead not only to invasion of employee privacy but also the information could be of use to competitors.

These two motions, plus one by Davis requiring that all annual meetings be held in New York State, were defeated.

Industry Groups Push Free Trade

(Continued from Page 63)

as to be objectionable."

All advocated cleaning up and simplifying administrative procedures so that they reflect the realities of the marketplace.

Biddle suggested removing from control "those items which are generally available to Eastern countries from other sources."

He added that policies and procedures should be changed to reflect the increased volume of export activities and the change in attitude toward trade that have occurred since 1969.

"While our national policy has changed 180 degrees from sell nothing to Eastern Bloc countries to one that encourages free and open trade, the same procedures must be followed under the Export Control Act that existed five years ago," he said.

"Particular requirements in licensing," he said, "should apply only to the most advanced technologies," which Biddle described as "a narrow band of sophistication at the leading edge of development rather than a broad band extending several years into the past."

He recommended that end-use reporting be required after delivery rather than before.

"While the supplier of a full system may have a use clearly identified at the time a sale is made, a supplier of peripheral equipment, who often sells to a system assembler rather than an end user, may not know what end user will claim the completed product," he explained.

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$500,000 Benchmark Equals $0 Contract

Mich. Bidding Procedures Leave Univac in the Cold

By Molly Upton
Of the CW Staff

LANSING, Mich. – Preparing for benchmarks on a system proposed for the State of Michigan cost Univac $500,000, only to have its bid remain unevaluated.

IBM and Control Data Corp. declined to bid on the system, leaving Honeywell, Univac and Burroughs as the mainframe hopefuls.

Honeywell, low bidder with a 6060, had two opportunities to run the benchmarks, while the proposal by Univac, second lowest bidder, was never considered.

Because the state originally specified benchmarks would be run on the low bidder's system only 15 days after the bids closed, vendors had to prepare for the benchmark tests before they knew if they were low bidder. Under state procedures, only the low bidder's system would be benchmarked if it met the specifications.

Willing to Invest

Commenting on the short amount of time bidders were given to prepare the benchmarks, without quarantee they'd be run, Univac's Detroit branch manager Peter Pritchard said the state explained it wanted to ensure it was dealing with responsive bidders who were willing to invest in the benchmarks.

"Based on that rationale I was extremely surprised that Honeywell was given a second chance. They were the low bidder when the bids were opened and requested and were granted an extension for the benchmark," he noted.

The Honeywell bid was $2.7 million less than the Univac bid, however, Pritchard noted, this did not include a difference in the rental rate on the three installed Univac 70/6s, the contract for which ends June 30.

In the absence of a Univac award, the units would be renewed at the standard one-year rates, whereas if Univac received the contract it was prepared to extend the current rates, which are about 30% less, Pritchard said.

Regardless of the new system chosen, the state will need its Univacs until all jobs are transferred, he observed.

Considering this factor, Honeywell underbid Univac by about $800,000, Pritchard said, noting this difference could disappear if there were delays in implementation of the Honeywell system.

It's All Relative

"The position we took was that $800,000 doesn't last very long if the conversion schedule slips. If it slips by four months, then the state has not gained a nickel," Pritchard said.

The State Subcommittee on Computers and Data Processing was made aware of this additional factor, he said, when the subcommittee gave "Univac its day in court," and heard presentations by Dr. John Dempsey, director of the State Department of Management and Budget, Univac and Honeywell.

The final acquisition responsibility rests with the subcommittee.

"As far as we're concerned, that's as far as we or any vendor should take the matter," Pritchard said.

"If we thought there was collusion or graft or something like that, obviously that would be a different matter. But in terms of fair and honest implementation of the bidding rules as seen and interpreted by honest sincere people, we took it as far as someone could take it. We didn't like the decision but we don't intend to protest it."

State Changes Rules On DP Acquisitions

LANSING, Mich. – The State of Michigan's Subcommittee on Computers and Data Processing has approved some changes in procurement procedures, effective with the next acquisition.

The new procedures will introduce a technical evaluation of proposals to try to quantify variances, explained Glenn Goodman, director of the Bureau of Management Sciences.

The new methods should alleviate some of the frustration, if not the expense, incurred by vendors preparing for benchmarks. Previously, vendors had no assurance they would have an opportunity to run benchmarks, as the state looked no further if the low bidder satisfied the requirements.

In addition to incorporating the concept of technical evaluation, the new guidelines eliminate certain aspects of the standard state contract, explained Joe Farrell, director of the Bureau of Management Services.

Purchase by Committee

A new joint evaluation committee will be named by the head of the Department of Management and Budget for each acquisition, giving increasing emphasis to the user rather than the department, he added.

"That would formalize in a sense what has been done on a very informal basis and perhaps without the same weight that it will have in the future," Farrell said.

The committee will consist of a representative of the user agency, the data center serving that agency, the purchasing department of the management and budget office, and the bureau of Management Sciences, Farrell explained.

In advance of each request for quotation, the committee will establish and quantify criteria for each acquisition. Different aspects to be considered will include such items as price, running time of programs, training and space occupied by a new system, he said.

This committee would also establish in advance what aspects of the standard state contract are not applicable for each acquisition.

Possibly some specifics on time frames for bids and benchmarks will be included in the guidelines drafted by his department, he said.

Although it is not unusual in state procurement circles to look only at the low bidder's benchmark performance, he said the state is changing because Jack Dempsey, director of the Office of Management and Budget, felt the procedure did not reflect the state of the art.

Farrell said the new procedures were not prompted by any vendor comments, or with the Univac-Honeywell situation in mind, or because IBM doesn't like the state's contract, although all these factors were considered in the course of drawing up the new guidelines.

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In Small Systems

Qantel Stresses Distributive Processing

NEWTON, Mass. – The real future of Qantel Corp. and its small business systems lies in the area of distributed processing, according to Douglas Baker, president.

However, most people are talking about the concept now, but in two or three years, that concept will be reality, he noted.

In the meantime, Qantel hopes to develop about 200 distributors and establish a solid user base of stand-alone systems.

To uncork the burgeoning market for small business systems that grows with each price decrease, Qantel has bought TV ad time in three stations and is also using radio commercials.

Although ads on TV started recently they are already proving their value, he said.

300,000 Prospects

Whereas there are something like 300,000 prospects for Qantel products now, there will be about three million by 1980.

Costs of small business systems should decline from $30,000 today to $10,000 to $15,000 by the end of the 70s, he said.

As an example of declining prices, he noted that three years ago a 4M-byte disk sold for $4,000. Now, a 12M-byte disk sells for $3,000.

Part of the key is software. "Somewhere off in the future we're going to be able to give away application software," he mused.

"In the past we didn't have the technology to solve users' problems. Now the reverse is true. We can't apply the technology that's available," he said.

Margins

Firms can now ship more than what the customer expected, he said. While the 4M-byte disks were great, they weren't the answer. Now for less money the customer gets 12M bytes, which gives him a margin for sloppiness, he noted.

Small business systems makers should solve problems to make the systems easy to use. One way is to go to the user and find out what his problems are, he suggested.

As machines become simpler, it is increasingly possible to train users inexpensively, Baker said.

Qantel has learned its lessons on software, he added. "Now it's no longer true that we're going to take a bath on a new customer."

Quantel is at 3474 Investment Blvd., Hayward, Calif. 94545.

Adapso Studying Energy Guides

NEW YORK – The Association of Data Processing Service Organizations is developing industry guidelines to help conserve energy and insure uninterrupted service.

The results of the study will be translated into a program designed to help the public at large, as well as the services industry, Adapso said.

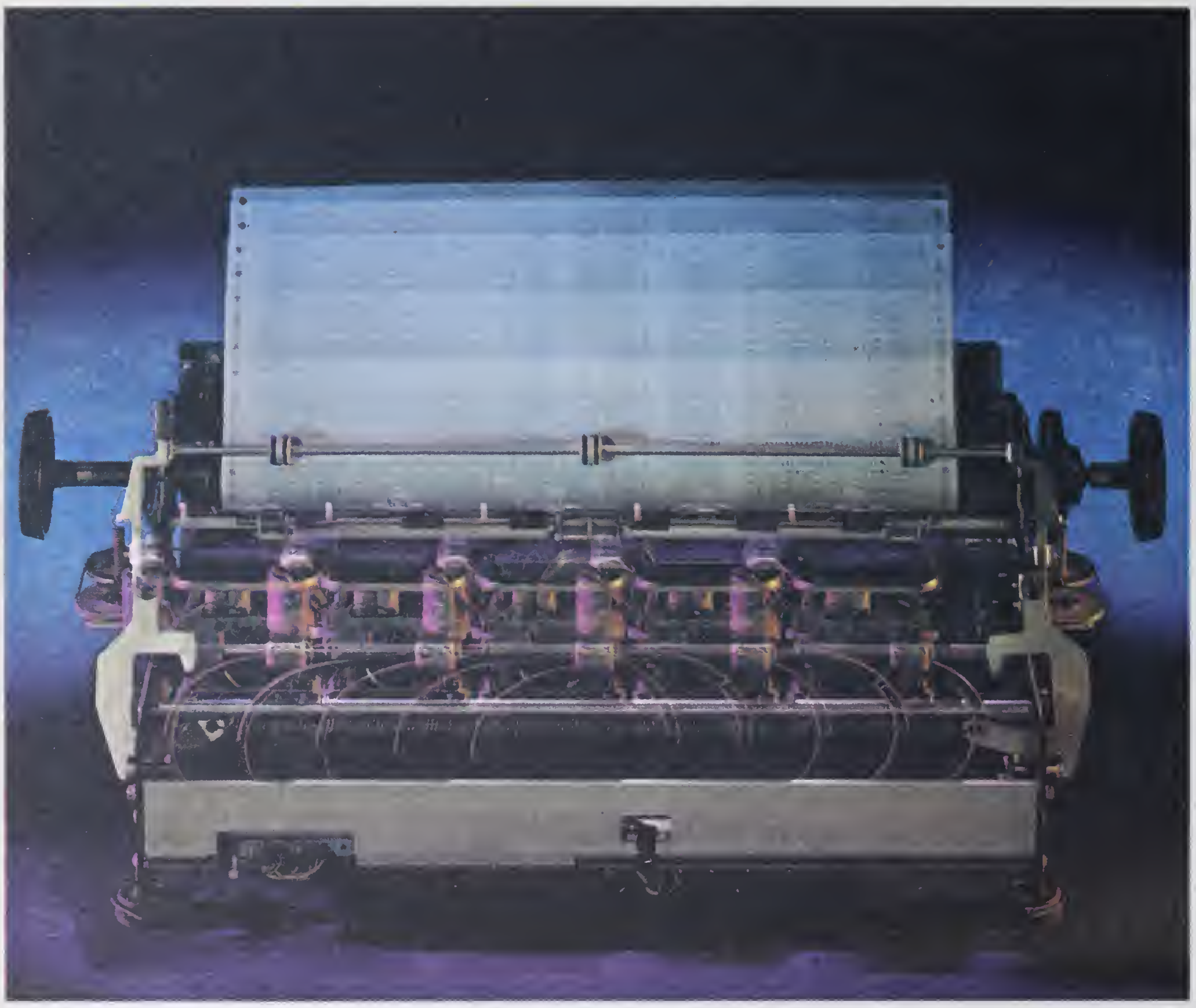
Various Factors

The study will consider various factors such as:

- Determining the most efficient air conditioning operating temperatures for each type of equipment.
- Recommending measures for dissipating computer-produced heat, through recycling for general space heating or other measures.
- Identifying operations that can be performed during the second and third shifts with reduced energy consumption, using a minimum of light and heat.
- Expediting cooperative arrangements between service centers and industrial DP operations to permit peak three shift operations and efficiency.
- Surveying energy requirements of competitive systems, with guidelines for improvement to suppliers.

"It is important to note the computer services industry is not a major consumer of energy," observed Jerry Dreyer, Adapso executive vice-president.

"The use of a data center is itself an energy conservation measure, because the concentration of EDP services in a single specialized organization permits peak level operations and otherwise promotes efficiency in the use of energy," he added.



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IBM World Trade Split Seen 'Logical' Decentralizing Move

PARIS – The move by IBM to split World Trade into two operating units, Europe, Middle East, Africa (Emea) and World Trade Americas, Far East (A/FE) is "a logical evolution of the trend toward decentralization into geographical areas," according to Jacques Maisonrouge, who has assumed his new role as chairman of World Trade Emea.

Previously, when more management structure was concentrated in New York at World Trade headquarters, he was president of World Trade Corp.

The change gives the "local geographic scene more power in the decision-making process," he said in an interview appearing in *Computing Europe*, the British Computing Society publication.

"It is very difficult for a single management team in New York to control the world," he added.

Most products, he said, are produced in the U.S., in Europe, and outside Europe at one plant in each area.

However, for large-volume items, such as the System/3, World Trade has manufacturing facilities in Europe, Japan and South America, as well as in the U.S.

World Trade tries to locate its manufacturing in a country "when its market is big enough and where we can avoid having a negative impact on the host country's balance of payments," he observed.

He said 90% of all parts and machines sold in Europe are produced in Europe.

A multinational firm, he said, is one that works in "many different countries at different stages of economic development, has several subsidiaries that are complete industrial corporations with manufacturing facilities, R&D, etc. Local management should be national and the regional management should be multinational, as should share ownership," he said.

Responsiveness

One reason for the reorganization was to give the firm the ability to improve its responsiveness to customers. Maisonrouge said World Trade runs surveys of customer satisfaction, and when "we see our marks going down, we want to act quickly," he said.

Having the decision-making centers close to the marketplace enables the firm to improve customer response in "terms of hiring more people, producing special products for our customers and so on," he said.

Under the previous arrangement, he said, proposals from a field office in IBM Europe would have to be stamped in Paris, then again in New York. Decisions impacting the U.S. would have to go through the process all the way to Armonk, he said.

International News

The new setup reduces the number of management levels from three to two, he noted.

The Emea organization represents about 69% of the revenues of World Trade and a little more than that in percentage of employees, Maisonrouge said.

Comparing gross income in the new European organization with that of the whole World Trade, he said, "We have as much gross income in Europe today as we had in the entire World Trade organization two years ago."

Too Costly

Maisonrouge noted the firm will not spread out its research and development because it is costly to proliferate and also because they've found that "as computers grow more powerful the individual market needs grow more similar, except in terms of customer-oriented products, which are adapted to selling conditions which may exist in one country."

World Trade endorses the "product by plant" concept, in which there are separate facilities to produce a particular product or several products for the entire European market.

Australians Close to 9,600 Bit/Sec Link

SYDNEY – The day of 9,600 bit/sec transmission is close at hand in Australia, where the current maximum speed allowed by the Australian Post Office is 4,800 bit/sec, the *Australian Financial Review* reported.

Led by permission from the Post Office for Honeywell Information Systems to obtain 9,600 bit/sec modems and start transmission at that speed between Sydney and Cleveland, Ohio, 9,600 bit/sec transmission is expected to be available to those who want it by the end of the year, the article said.

The Post Office has been conducting trials with Qantas on transmission at 9,600 bit/sec over various overseas routes, and results are expected to be available within six months.

The Post Office controls and supplies all modems in Australia and is understood to be investigating 9,600 bit/sec modems from Codex Corp. Other suppliers are also bidding on a Post Office contract.

Data transmission is seen as one of the Post Office's most rapidly growing areas of business, with about 1,400 Australian users transmitting data within the country at speeds from 600 bit/sec to 4,800 bit/sec.

Using 9,600 bit/sec will mean a quadrupling of the speed available to Honeywell using the General Electric Mark III time-sharing service, which currently operates at 2,400 bit/sec.

Ray Whiteside, head of HIS time-sharing Australian operations, said about 150 of its local customers had switched to Mark III since it became available in Australia in October. He said the project was "ahead of target" to become profitable by June this year.

He expects almost all of Honeywell's 300 customers will have transferred to Mark III within 18 months.

Honeywell, he added, already has 25% of the Australian time-sharing market, and hopes to have 30% by the end of the year, with the aid of Mark III.

Teheran Expo Will Show Products From 35 Countries

TEHERAN, Iran – An international licensing and new product exposition will be held here June 1-5 under the sponsorship of Patents International Affiliates, Ltd. (PIA).

The show will also introduce in the Middle East PIA's Patindex, a data bank service for dissemination of new patents, products and processes covering 21 industry segments.

Companies from 35 countries are expected to participate in the show at the Arya Sheraton Hotel here.

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Sorbus Offers Repair Courses

KING OF PRUSSIA, Pa. – Sorbus, Inc. has decided to open the doors of its training programs to students interested in learning how to repair and maintain a variety of equipment.

Sorbus has run these courses for several years for its own personnel and for students from selected OEM companies, and has previously made them available to others, but not on a large scale, observed Keith Wagerle, director of the Sorbus Education Center.

"Now we feel there's a big end-user market out there; we can do more for the end users and for the companies that are also in the maintenance business that might have an overload of students to train," he said.

Many of the attendees at Sorbus' previous training classes have been from manufacturers who want to get their employees involved in some aspects of their facility, such as production, final test, quality control or support, he said.

Wagerle said he had no idea which courses will prove especially popular, but will be interested to find out. Sorbus offers three day courses to familiarize students with the 360 and 370, and an 18-day course on the 360/30 CPU.

Other courses cover the IBM 1403 printer, 2540 card reader punch and 2821 controller, and the 2401 tape drive and 2803 controller, as well as the 2311 disk drive and 2841 controller.

Courses on several independents' peripherals are also available, as well as one on Microdata 800/1600 minis. Various courses are available on request from 875 First Avenue, 19406.

Booming Growth Seen In Process Control

NEW YORK – Sales to the process control industry will climb to $2.7 billion by 1982, up from $1.3 billion in 1972, according to a market study by Frost & Sullivan.

The energy crisis, rising production costs and stringent environmental standards are prime factors in the anticipated growth of the market for process control equipment, the research firm said.

The firm predicted that coal gasification and coal liquefication will be commercialized by 1982. By the late Seventies, Frost & Sullivan predicted, these developments should be making a significant contribution to process control equipment sales.

The process industry, however, accounts for only 80% of all process control equipment produced, the report stated. Electric utilities buy from 10% to 12%, with the remaining market spread over a variety of buyers and applications.

The major marketplace for process control equipment includes the petroleum, chemical, food and beverage, steel, pulp and paper, and the rubber, plastics and building materials industries, the study showed.

The petroleum industry, the study said, was the leading user of process control equipment in 1972 with purchases totaling $336 million. That industry is expected to spend $655 million in the field by 1982.

The chemical industry, which spent $220 million in the field in 1972, will raise that figure to $481 million by 1982, the report predicted.

Eight firms accounted for 55% of 1972 sales of process control equipment, Frost & Sullivan found, including Honeywell (12%), Foxboro (8%) and Fischer Controls (7%).

First Data, User Click On Stock Data Base

WALTHAM, Mass. – A user's need and suggestion evolved into a joint venture product offered by First Data Corp., a time-sharing firm, on its Decsystem 10s.

The evolution of Fastock, the firm's stock market analysis data base and programs, is different from some of First Data's other offerings, which are written by outside software firms.

Fastock was created by the user that suggested the project, Danforth Associates, Inc., an investment management firm, in conjunction with First Data.

The company's Decsystem 10s, a dual KA-10 and one KI-10, with another KI-10 in the works, enable First Data to charge lower rates than it could if it used IBM machines, observed Sy Morse, marketing manager for First Data.

The data base contains current and historical trading statistics for more than 11,000 securities, including daily volume, high, low and closing prices. More than 25 daily market indices for price and trading volume are available, Morse said.

From a suggestion grew a product that now has about 12 users, including mutual funds, brokerages, individual investors, investment counselors and investment management firms, he said.

Orders & Installations

Ball Memorial Hospital, Muncie, Ind., has installed an NCR Century 101 for in-patient and out-patient billing, processing accounts receivable and maintenance of the Medicare log.

Spartan Mills, a South Carolina textile manufacturer, has installed a Burroughs dual processor B6700 system for order entry, inventory, payroll and various management report applications.

First National Bank of Phoenix, has ordered an 1110 system from Sperry Univac valued at $4.3 million.

Brandon Applied Systems, Inc. has installed an IBM 370/158, replacing a Model 155 installed earlier this year.

Time Sharing System, Inc., Milwaukee, has installed a Burroughs B6700 system.

Deaconess Hospital, Spokane, Wash., has installed an MCS 100 system from Beehive Medical Electronics to provide diagnostic and monitoring capabilities to the medical staff serving the cardiac, intensive care and advanced care units.

Amoco Chemicals Corp., Alvin, Texas, has installed a Foxboro FOX 1 Process Management and Control System, Spec 200 electronic analog instrumentation and Interspec. The equipment will control an olefins plant.

Horizon Corp., Tucson, Ariz., has ordered a Decsystem-10 computer from Digital Equipment Corp. to process marketing, construction and contract data for developing Horizon communities in Arizona, New Mexico and Texas.

Jacome's, a Tuscon, Ariz., department store, has ordered 50 NCR 280 point-of-sale terminals, two NCR 723 data collectors and an NCR Century 101.

Central Michigan University has ordered a Univac 1106 to consolidate the activities of three computers presently being used on the campus.

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But the Compiler WILL Work

Project That Failed Leaves Memories for Loser

By Miles Benson

Special to Computerworld

Usually computer programs are built with a particular project in mind. Occasionally, like a contractor building a house without having a customer in mind, a program is built "on spec."

A few years ago, before the recession of the late Sixties wiped out computing's brave, brazen and bold, there was a large plum dangled in front of all computerdom by the military. It was a project so large, with potential rewards so high, that mere mention of it made everyone in the industry salivate.

But the price of admission was also high; the construction of a compiler for a major new programming language.

The speculative computer program this story concerns belongs to a loser.

What do you do with an unloved and unwanted computer program? If it's worth as much as this one, you look around for another project it could be applied to, and you try to use it there.

And that's exactly what this loser did.

But when a program is stuck on the shelf before anyone has had a chance to wring the bugs out of it, and the development team that breathed life into it breaks up and wafts away on the computing trade winds, what you have is, at best, an unstable program with no one who understands it well enough to stabilize it.

And so, when the loser pulled this compiler down off its shelf and plugged it into the new project, some sparks flew.

Superficially – and this probably made matters worse – the compiler was in great shape. But down at the nitty-gritty level, the compiler got its tongue twisted around its register allocations, and forgot what data belonged to what symbolic location, and tried to optimize its object code into oblivion.

In short, its beauty was little more than skin deep.

The company leading the project grew restless under this stress.

This particular project leader wasn't one to let grass grow under its feet.

If the program doesn't work, get down to brass tacks and coding pads and fix it. And that's what it decided to do.

With a neat twist. When the project leader took delivery of the wounded compiler, it has made sure that it got full ownership, which included full documentation and a reasonably complete maintenance document.

With that as a basis, a contract was drawn up for a major compiler rehabilitation project . . . and put out for competitive bids!

The original speculative builders of the program were left off the bidder list, and out in the cold.

Now you can see why it's unclear whether this is a project which failed. The project itself will live on, when the smoke clears away and the hammers and crowbars are stilled and the repair work is complete. The compiler *will* be made to work – it has to.

But the loser, who built a compiler "on spec" and lived to see it taken away, has only its memories to console it.

Adcom Elects Officer Slate

CW West Coast Bureau

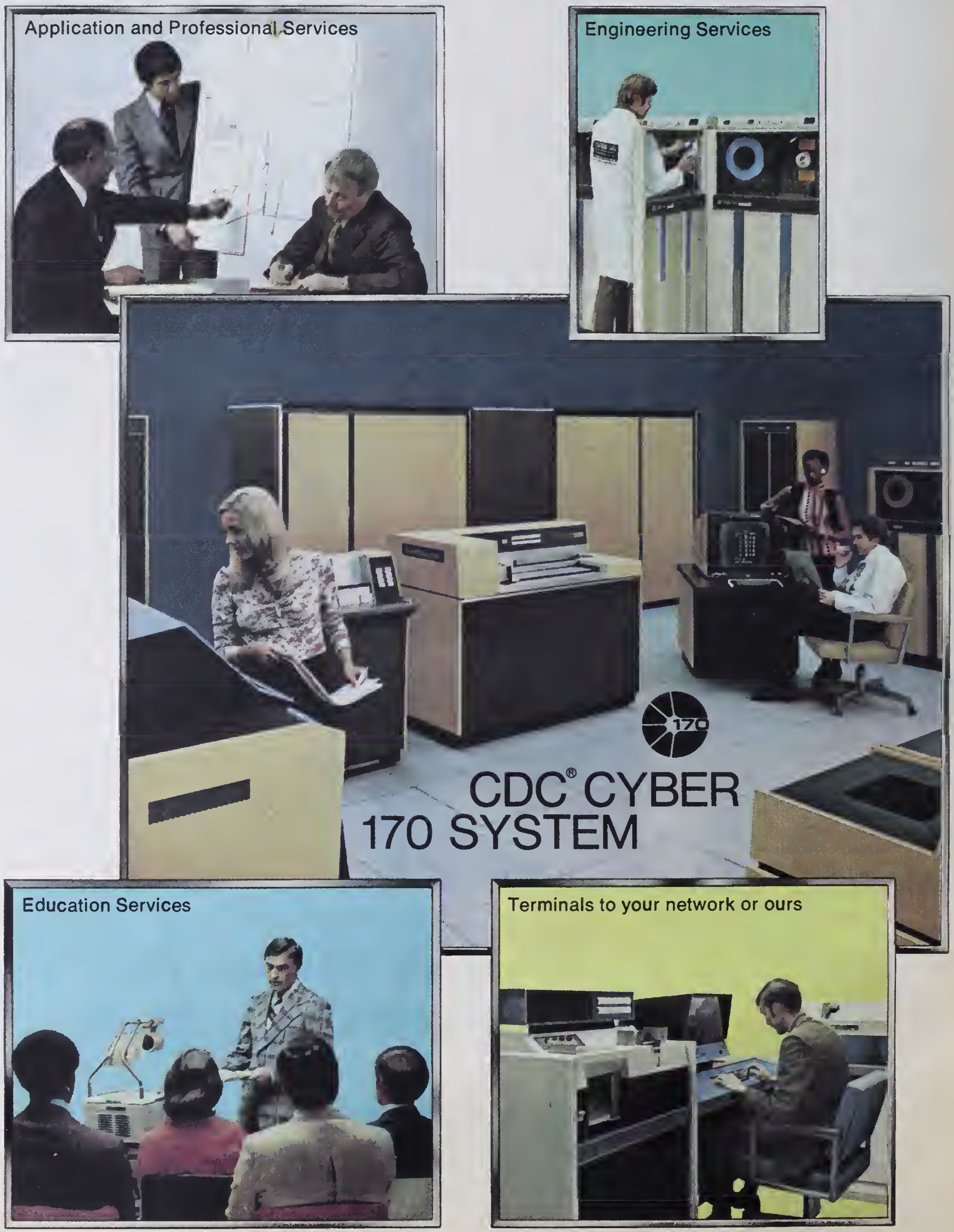
LOS ANGELES – Richard G. Elzinga, general manager of The Data Corp., has been elected president of the Association of Data Center Owners and Managers (Adcom).

Other officers elected are Dave Childs of Computer Delight, vice-president; Richard E. Hillery of Gambles Datamation Center, secretary-treasurer; Les Warner of Apex Data Processing, membership chairman; and William Clauer of Intellectron, program chairman.

Adcom is a nonprofit organization of Southern California data processing companies and service bureaus that recently campaigned before the Los Angeles City Council and Department of Water and Power for certain ordinances governing electrical power usage.

Executive Corner

- Richard De Lancie was elected vice-chairman of Remote Computing Corp.
- Burton R. Cohn has been elected chairman of the board and chief executive officer of Xynetics, Inc.
- Memorex Corp. has named Robert C. Stender as vice-president, product development and planning for equipment products, and George E. Dashiell as vice-president and general manager of marketing for equipment products.
- Christian Simon has been promoted to president of Computer Machinery Corp. France, CMC's wholly owned French subsidiary.
- J. Thiel Sullivan, president of Planning Research Corp. Information Sciences Co., has been appointed executive vice-president of PRC Data Services Co. and will serve in this capacity as an additional responsibility.
- Joseph A. Genovese has been named vice-president and patent counsel by Control Data Corp.
- A. William Wilbur, general manager of TRW Data Systems, has been appointed vice-president of TRW Canada Ltd.
- Ronald L. Barbaree has been named vice-president of APL Services, Inc.
- Desmond H. Pitcher has been elected vice-president of marketing and business planning for the new Sperry Univac European Division, headquartered in London.
- Paul E. Payne, previously director of product planning, has been promoted to vice-president, engineering, for International Communications Corp.
- Henry L. Tinker has been appointed vice-president, operations, at International Video Corp.
- Kenneth I. Taylor, formerly director of engineering, has been named vice-president, engineering, at International Video Corp.
- Charles B. Bailey Jr. has been elected vice-president of marketing for Computer Communications, Inc.
- Stephen Sohn has been appointed vice-president, finance for Periphonics Corp.
- Edward J. Clark, a member of MRI Systems Corp.'s board of directors, has been named vice-president, business development.
- William H. Parsons has been promoted to the newly created position of vice-president, finance and administration, for Keane Associates, Inc.
- Carl D. Carman has been elected director of engineering for Data General Corp.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Computer Automation Earnings Double

IRVINE, Calif. – Computer Automation, Inc.'s (CAI) third quarter earnings nearly doubled from those of a year ago and nine-month results were also up sharply.

In the third quarter, earnings of the Naked Mini maker rose to $540,258 or 32 cents a share from $272,020 or 16 cents a share in the year-ago period.

Revenues rose 81% to $5.6 million from $3.1 million in the same 1973 period.

For the nine months, earnings reached $1.3 million or 80 cents a share compared with $849,927 or 54 cents a share in the year-ago period, when there was an $184,000 tax credit.

Revenues for the three quarters climbed to $13.8 million from $7.9 million a year ago.

During the quarter, more than 700 Naked Mini and Alpha/LSI-Type 2 computers were shipped.

Data 100 Off to Good Start to '74 Goals

MINNEAPOLIS – Data 100 Corp. seemed to be off to a good start toward fulfilling President Edward D. Orenstein's predictions of a "substantial increase" in its 1974 revenues and earnings as first quarter income before special credits rose 95% and revenues 82% over the figures of the year-ago period.

The value of Data 100's 1974 product shipments should increase 40% and top the $75 million mark, he observed in the firm's annual report.

R&D expenditures for 1974 will also rise, about 60% to over $4 million from $2.5 million in 1973.

For the three months ended March 31, earnings rose to $891,000 or 16 cents a share compared with $504,000 or 9 cents a share in the year-ago period.

Both periods included tax credits of $360,000 in 1974 and $232,000 in 1973.

Revenues rose to $13.9 million compared with $7.7 million during the year-ago period. Revenue figures include sales to third-party leasing companies of nearly $5 million during the recent period and nearly $3 million in the year-ago period.

First quarter gains were the result of continuing strong demand for the firm's remote batch terminals, Orenstein said, adding that the backlog and new order rates were at record levels at the end of the quarter.

For the year ended Dec. 31, Data 100 posted record revenues and earnings, with earnings of $3.4 million or 61 cents compared with a loss of nearly $6 million or $3.33 a share in the year-ago period.

Revenues for the year rose to $42.7 million from $13.1 million last year. Monthly revenues from the lease base at year end rose 84% to $1.8 million, the firm said.

The ultimate objective for a lease/purchase mix is two-thirds "into our lease pool and the other third to consist of outright purchases by end users or other manufacturers with no sales to third-party lessors," observed George A. Reed, executive vice-president of finance and administration.

"In terms of 'retail sales value,' 45% of our shipments were leased and 55% purchased in 1973. In 1974, our objective is to ship $75 million of terminals at 'retail sales value,' half of it leased and half purchased, he said.

Reed added Data 100 has available a total of $16 million of non-recourse lease financing for 1974. "After that, we hope to be able to maintain our increasing increments of profits without having to sell to third-party leasing companies equipment we would like to retain in our own lease base."

About 25% of the firm's 1973 terminal shipments were in foreign markets, and this is expected to increase to around 35% by the end of 1974, noted Bruce Bambrough, vice-president of operations.

In 1973, the firm shipped 1,098 terminals with a retail value of $53.5 million, he said. Plans call for a third European plant to be added in early 1975.

At the end of the year Data 100 had shipped a total of 2,272 terminals since its inception in 1969.

Stock Performance Analysis Confirms What You May Know

WALTHAM, Mass. – Investors feeling a bit burned by the vagaries of the stock market in the first quarter might find some solace in hindsight analysis by computer offered by Interactive Data Corp.

During the quarter 64.5% of stocks listed on the New York Stock Exchange and 75.4% of those on the American Stock Exchange increased in value, an average of 0.3% per share on the NYSE and 9.7% on the Amex.

But the Dow Jones Industrial Average dropped from 850.86 at year end to 846.68 on March 29, while the Value Line composite index rose 6.59%, the report said.

"While some 65% of all stocks on the Big Board posted increases in the quarter, our analysis of the 20 most heavily capitalized issues showed only six in the plus column with 14 declining, some substantially," said Jack A. Arnow, president of Interactive Data Corp.

In addition, 45% of the stocks listed on the Big Board traded between a 10% loss or a 10% gain in value. On the Amex, 31% of those listed traded in the same range.

The analysis spotlighted some Standard & Poor's industry classifications, which showed mobile homes had the highest upside activity, up 60.87%, followed by gold mining, 42.62%.

Those who feel their portfolios thinner now than at the beginning of the year may not need to be told that classifications with downside activity included the leader, offshore drilling, down 26.79%; oil well – machinery and service – 20.59%; steam generators, 19.83%; and producers of crude oil, 17.44%.

Interactive Data Corp. runs its stock performance analyses on an IBM 360/67.

Nashua DP Unit Shines

NASHUA, N.H. – The Computer Products Division was the fastest-growing unit of Nashua Corp. in 1973 in both sales and profits, the company said.

Revenues increased to $14.1 million from computer operations, nearly double those of 1972. Profit margins of the division are above the corporate average with cartridges and disk packs for the IBM System/3 and 370 Series the fastest-growing products in the division, the firm said.

Computer products represented 6% of Nashua's total sales and 11% of income before taxes for the year.

The company as a whole earned $11.6 million or $2.55 a share compared with $9.7 million or $2.15 a share a year ago. Revenues reached $224.3 million compared with $171.6 million in 1972.

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Automakers, 'Digest' Hit With Antitrust Suit

By a CW Staff Writer

NEW YORK – Car/Puter International Corp. and its subsidiary, United Auto Brokers, Inc., of Brooklyn, New York, have filed an anti-trust complaint in the U.S. Distrist Court, Eastern District of New York against *Reader's Digest*, GM, Ford, Chrysler and American Motors Corp. charging that *Reader's Digest* unlawfully conspired with these automakers to restrain Car/Puter and United Auto Brokers from engaging in free competitive enterprise by refusing to accept their advertising.

Car/Puter is a consumer service company that provides computerized lists of dealer costs for new cars, and United Auto Brokers, Inc. acts as a broker for consumers seeking the cheapest available auto prices.

The lawsuit alleged violation of the Clayton and Sherman Antitrust Acts, the General Business Law of the State of New York and the First Amendment of the Constitution.

The complaint alleged further that Car/Puter and United Auto Brokers had suffered damages amounting to $2 million and sought treble damages of $6 million plus an injunction restraining *Reader's Digest* from continuing to refuse to accept their advertising.

Car/Puter provides computerized new car prices to potential buyers for a fee of $10. United Auto Brokers, Inc. offers to buy automobiles for consumers for $125 over dealer's cost.

Armed with a detailed computer printout showing dealer cost, manufacturer's suggested retail price (sticker price), freight charges and other related information, the prospective buyer is in a stronger bargaining position when he negotiates the purchase of a new car with his local dealer.

In a letter to Car/Puter President Arnold W. Wonsever, *Reader's Digest* New York manager Burton H. Boersma explained it was "declining Car/Puter's advertising because of its direct competitiveness with automotive dealers . . ." – an important source of *Reader's Digest* advertising revenue.

"The refusal of our advertising by *Reader's Digest* and other media because of our direct competitiveness with automobile dealers not only violates our laws but shatters the free enterprise system that our country has grown on," Wonsever said.

"It is obvious that the automobile industry can apply enormous economic pressure to the media by withdrawing its advertising dollars, and while this may only be temporary, the advertising revenue lost by the media can be staggering," he said.

Dealer Boycotts

This has been evidenced by the dealers' boycott of advertising in several newspapers that ran favorable editorial coverage about Car/Puter's service.

"Hundreds of newspapers and magazines as well as TV and radio have continually reported favorable editorial coverage about Car/Puter. Yet many have refused to accept Car/Puter advertising, such as in the case of *Reader's Digest*," Wonsever said.

"We have submitted our advertising to approximately 50 publications and they all refused to accept it without giving the reason. They replied by letter saying, 'unacceptable,' or gave our advertising agency a verbal rejection.

"Where does the responsibility of the media lie, with its advertisers or with its readers, viewers and listeners?" Wonsever asked.

"Car/Puter's services balance the bargaining power between buyer and seller and can contribute greatly to halting the spiraling inflationary trend we are witnessing today. The suppression of our messages by the media is an injustice to the consumer as well as to Car/Puter," Wonsever said.

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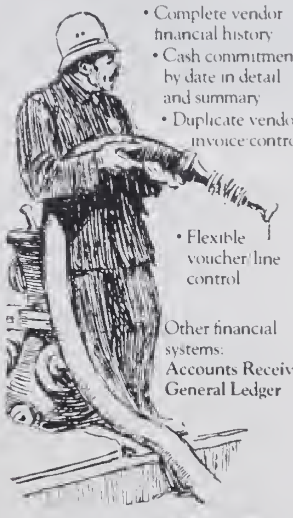

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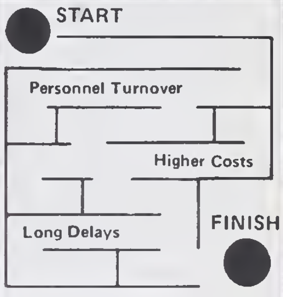

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Revenues on the Rise at 3 T/S Firms

Revenues were on the rise for three time-sharing firms – International Timesharing Corp., Keydata Corp. and On-Line Systems – but only On-Line managed to show an increase in earnings for the most recent quarter. Results of all three firms improved during the six- or nine-month periods.

Minneapolis-based International Timesharing's third-quarter earnings were "heavily impacted by losses from the IBM 360/65-based operation which we acquired in October," explained President William Klink.

"While the results from our newly acquired IBM capability reversed the profit trend of the last three quarters, management expects that the impact on our next fiscal year and subsequent years will be positive and substantial," he said.

Losses for the third quarter ended Feb. 28 grew to $250,462 or 13 cents a share compared with $57,611 or 3 cents a share in the year-ago period.

Revenues rose to $1.4 million from $912,962 last year.

In the nine months, however, losses decreased to $100, 387 or 5 cents a share from $267,433 or 13 cents a year ago. Revenues jumped 48% to $4.2 million from $2.8 million in the 1973 period.

Conversion Slows Keydata

Keydata Corp.'s second-quarter and first-half earnings were slowed by implementation delays and nonrecurring costs from conversion of the nationwide network to a new high-speed terminal unit, explained President John T. Gilmore Jr.

The program is now 80% complete, he added.

During the quarter ended Jan. 31, revenues rose 27% to $2.9 million from $2.3 million in the year-ago period.

Earnings, after terminal conversion costs of $117,000, totaled $124,000 or 5 cents a share compared with $201,000 or 7 cents a share in the same period last year.

For the six months, however, earnings rose to $427,000 or 16 cents a share after a $167,000 conversion charge, compared with earnings of $377,000 or 13 cents a share in the year-ago period.

Revenues for the half rose 30% to $5.8 million from $4.4 million a year ago.

When fully installed, newly booked services will produce "additional repetitive revenues of more than $3 million a year," Gilmore said.

On-Line Improves

At On-Line Systems, both earnings and revenues grew for the nine months and third quarter.

In the quarter, earnings totaled $409,292 or 46 cents a share compared with $220,950 or 28 cents a share in the year-ago period. Revenues rose to $2.5 million from $1.6 million.

For the nine months, earnings and revenues set records, with earnings totaling $1.1 million or $1.32 a share compared with $456,010 or 58 cents a share last year.

Revenues for the period jumped 51% to $6.9 million from $4.6 million in the year-ago period.

President Jack Roseman credited the continued improved performance to new business and increased usage of proprietary software products by existing customers.

Calcomp Has 'Largest Quarter' Yet

ANAHEIM, Calif. – With the firm's "largest quarter and nine months" completed, it appears California Computer Products, Inc. will achieve revenues of $100 million during 1974, as projected by President Lester L. Kilpatrick.

In the third quarter ended March 31, earnings rose to $3.1 million or $1.01 a share, including a $1.4 million tax credit, compared with earnings of $976,000 or 33 cents a share in the year-ago period.

Revenues rose to $34.7 million from $21.3 million in the same 1973 period.

In the nine months, earnings jumped to $6.7 million or $2.20 a share, including a $3 million tax credit, compared with a loss of $603,000 or 21 cents a share in the year-ago period.

Revenues reached $91.7 million from $54.8 million last year.

...Toward the Bottom Line

Xiox International laid its 1973 loss of $397,735 to higher interest rates on the computer portfolios the company leases, and an erosion of lease rates on the portfolio in excess of those anticipated. Last year the company had a profit of $11,281.

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Mirco Systems received multiple orders totaling more than $250,000 during one week in March. The orders from Honeywell, General Automation and Data 100 include the Mirco Flash test generation software package and the Mirco 410 Logic Circuit Test System.

Acquisitions

International Computer Corp. has agreed in principle to acquire all of the outstanding capital stock of **Vulcan Energy Resources Corp.** in exchange for ICC common stock to be issued over a five-year period in proportion to Vulcan's earnings in that period.

Kleffman Electronics, Inc. of Minneapolis has acquired the **computer hardware manufacturing operation** of International Timesharing Corp.

Almqvist & Wiksell Informatics Corp. has acquired **Magnetic Input Services Corp.**

Time Brokers, Inc. has acquired all rights to **Abacus**, an O/S 360/370 accounting/billing system, from ADR, Inc.

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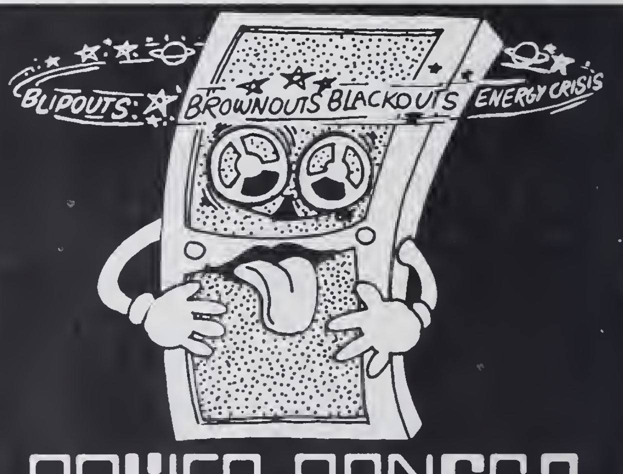

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(312) 751-8100

Earnings Reports

DATA GENERAL
Three Months Ended March 16

	1974	1973
Shr Ernd	$.23	$.17
Revenue	14,942,000	11,160,000
Earnings	1,859,000	1,396,000
6 Mo Shr	.46	.32
Revenue	29,779,000	20,987,000
Earnings	3,714,000	2,648,000

SIGNETICS
Three Months Ended March 24

	1974	1973
Shr Ernd	$.58	$.32
Revenue	31,454,000	17,841,000
Tax Cred	437,000	592,000
Earnings	3,238,000	1,342,000

MATHEMATICA
Six Months Ended Dec. 31

	1973	1972
Shr Ernd	$.44	$.38
Revenue	5,251,400	4,879,900
Earnings	309,500	269,200

LOGICON
Three Months Ended Dec. 31

	1973	1972
Shr Ernd	$.14	$.10
Revenue	5,350,541	3,011,261
Earnings	118,899	77,890
9 Mo Shr	.32	.40
Revenue	13,733,592	9,176,514
Earnings	276,599	349,272

BURROUGHS
Three Months Ended March 31

	1974	1973
Shr Ernd	$.55	a$.49
Revenue	322,797,000	274,435,000
Spec Cred	.....	b2,425,000
Earnings	21,376,000	18,771,000

a-Adjusted to reflect a two-for-one stock split in March 1974. b-From sale of securities.

IBM
Three Months Ended March 31

	1974 (000)	1973 (000)
Shr Ernd	$2.94	a$2.34
Revenue	3,001,741	2,450,511
Earnings	431,264	340,132

a-Adjusted for a 25% stock dividend in May 1973.

GENERAL INSTRUMENT
Year Ended Feb. 28

	1974	1973
Shr Ernd	$1.82	a$1.11
Revenue	425,697,674	318,630,079
Earnings	13,955,564	9,248,482
3 Mo Shr	.36	a.23
Revenue	111,773,155	86,091,243
Earnings	2,830,734	1,942,243

a-Adjusted to reflect a 2% stock dividend paid in May 1973.

NATIONAL DATA
Nine Months Ended Feb. 28

	1974	1973
Shr Ernd	$.20	$.29
Revenue	23,884,495	9,931,668
Tax Cred	.....	321,600
Earnings	1,055,259	1,419,743

HAZELTINE
Three Months Ended March 31

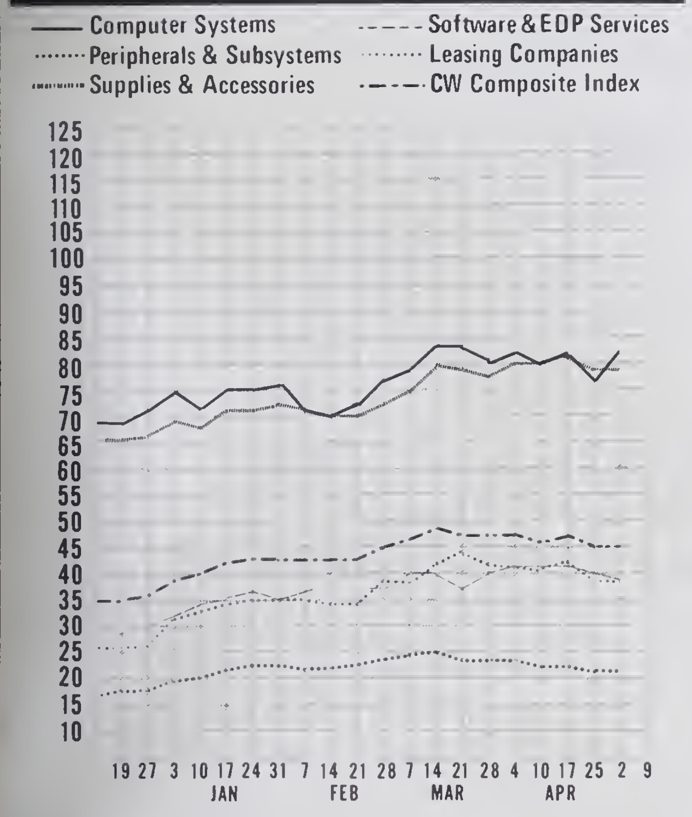
	1974	1973
Shr Ernd	$.10	$.22
Revenue	28,062,000	18,303,000
Tax Cred	.....	235,000
Earnings	193,000	441,000

CAMBRIDGE MEMORIES
Three Months Ended March 2

	a1974	1973
Shr Ernd	$.15	$.11
Revenue	5,627,264	2,769,746
Tax Cred	.....	5,880
Earnings	204,856	140,076
6 Mo Shr	.32	.20
Revenue	10,495,779	4,666,327
Tax Cred	.....	62,880
Earnings	426,510	258,488

a-Results reflect a provision of $250,000 to the reserve for doubtful accounts for an expected loss on an accounts receivable.

COMPUTERWORLD Computer Stocks Trading Indexes



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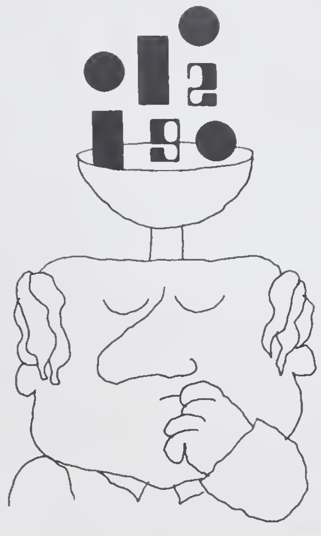

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Computerworld Stock Trading Summary

All statistics compiled, computed and formatted by
TRADE★QUOTES, INC.
Cambridge, Mass. 02139

COMPUTER SYSTEMS

EXCH		1973-74 RANGE (1)	CLOSE MAY 2 1974	WEEK NET CHNGE	WEEK PCT CHNGE
N	BURROUGHS CORP	44-126	102 3/4	+7	+7.3
N	COLLINS RADIO	16- 26	24 3/4	0	0.0
O	COMPUTER AUTOMATION	5- 20	11 3/4	+1 1/2	+14.6
N	CONTROL DATA CORP	30- 62	31 3/4	+1 1/2	+4.9
N	DATA GENERAL CORP	29- 48	33	+1	+3.1
O	DATAPOINT CORP	10- 21	12 3/4	+1	+8.5
O	DIGITAL COMP CONTROL	2- 6	3 3/4	- 1/8	-3.2
N	DIGITAL EQUIPMENT	73-121	116 1/8	+12 3/8	+11.9
N	ELECTRONIC ASSOC.	2- 9	2 3/4	0	0.0
A	ELECTRONIC ENGINEER.	6- 14	9 3/4	- 1/8	-1.2
N	FOXBORO	23- 49	37	+3	+8.8
O	GENERAL AUTOMATION	22- 55	38 1/2	+6 1/2	+20.3
O	GRI COMPUTER CORP	1- 3	1 1/2	+ 1/8	+9.0
N	HEWLETT-PACKARD CO	70- 99	84 3/8	+5 1/8	+6.4
N	HONEYWELL INC	68-138	77 1/2	+2	+2.6
N	IBM	222-340	229 3/8	+7 3/4	+3.4
O	INTERDATA INC	7- 22	19 3/4	+2 3/4	+16.1
O	MICRODATA CORP	2- 10	3 5/8	+ 1/8	+3.5
N	NCR	27- 46	37 1/4	+ 3/4	+2.0
N	RAYTHEON CO	22- 39	35 1/4	+2 3/4	+4.4
N	SINGER CO	32- 74	31 7/8	+ 3/8	+1.1
N	SPERRY RAND	36- 56	39 1/2	+ 7/8	+2.2
A	SYSTEMS ENG. LABS	1- 8	2	+ 1/8	+6.6
N	TEXAS INSTRUMENTS	83-139	106 7/8	+8 1/2	+8.6
O	ULTIMACC SYSTEMS INC	1- 11	1 3/8	+ 1/8	+10.0
N	VARIAN ASSOCIATES	10- 20	10 3/8	+ 3/8	+3.7
N	WANG LABS.	13- 34	13 3/4	- 3/8	-2.6
N	XEROX CORP	106-168	111 1/4	+2 1/4	+2.0

LEASING COMPANIES

EXCH		1973-74 RANGE (1)	CLOSE MAY 2 1974	WEEK NET CHNGE	WEEK PCT CHNGE
A	BOOTHE COMPUTER	1- 5	1 1/8	0	0.0
O	BRESNAHAN COMP.	1- 2	2 1/8	0	0.0
O	COMDISCO INC	4- 17	3 7/8	- 3/8	-8.8
O	COMMERCE GROUP CORP	3- 6	5	- 1/4	-4.7
O	COMPUTER EXCHANGE	1- 1	1/4	0	0.0
A	COMPUTER INVSTRS GRP	2- 8	2	0	0.0
O	COMP. INSTALLATIONS	1- 2	1 1/8	0	0.0
M	DATRONIC RENTAL	1- 3	1 5/8	- 1/8	-7.1
A	DCL INC	0- 3	1/2	+	+14.1
N	DPF INC	3- 8	3 5/8	+ 1/8	+3.5
O	EDP RESOURCES	1- 3	3 1/4	0	0.0
A	GRANITE MGT	2- 6	2	0	0.0
A	GREYHOUND COMPUTER	3- 6	3 3/4	+ 1/8	+3.4
A	ITEL	4- 12	5	+ 1/8	+2.5
N	LEASCO CORP	8- 18	10	+ 1/4	+2.5
O	LEASPAC CORP	1- 8	1 1/4	0	0.0
O	LECTRO MGT INC	1- 2	1/2	+ 1/8	+33.3
O	NPG INC	3- 15	3 5/8	+ 1/8	+3.5
A	PIONEER TEX CORP	3- 10	3 3/8	0	0.0
A	ROCKWOOD COMPUTER	1- 3	3/4	- 1/8	-14.2
N	U.S. LEASING	15- 36	15 1/8	-1 7/8	-11.0

EXCH: N=NEW YORK; A=AMERICAN; P=PHIL-BALT-WASH
L=NATIONAL; M=MIDWEST; O=OVER-THE-COUNTER
O-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID
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SOFTWARE & EDP SERVICES

EXCH		1973-74 RANGE (1)	CLOSE MAY 2 1974	WEEK NET CHNGE	WEEK PCT CHNGE
O	ADVANCED COMP TECH	1- 2	1 1/8	0	0.0
A	APPLIED DATA RES.	2- 6	2 7/8	- 1/8	-4.1
O	APPLIED LOGIC	1- 3	3/8	0	0.0
N	AUTOMATIC DATA PROC	30- 94	40	+ 1/4	+0.6
O	BRANDON APPLIED SYST	1- 1	1/4	0	0.0
O	CENTRAL DATA SYSTEMS	3- 9	3 1/2	0	0.0
O	COMPUTER DIMENSIONS	1- 5	2	0	0.0
O	COMPUTER HORIZONS	1- 6	3 1/2	0	0.0
O	COMPUTER NETWORK	1- 5	1 3/8	- 1/8	-8.3
N	COMPUTER SCIENCES	2- 6	3	+ 1/4	+9.0
O	COMPUTER TASK GROUP	1- 2	3/8	- 1/8	-25.0
O	COMPUTER TECHNOLOGY	1- 3	1/2	0	0.0
O	COMPUTER USAGE	3- 8	3	- 1/4	-7.6
O	COMRESS	1- 2	3/8	0	0.0
O	COMSHARE	2- 9	2 3/4	0	0.0
N	CORDURA CORP	2- 15	2 3/8	0	0.0
O	DATATAB	1- 4	1 3/8	0	0.0
A	ELECT COMP PROG	1- 2	1/4	0	0.0
N	ELECTRONIC DATA SYS.	12- 56	15 1/2	+1 1/4	+8.7
O	INFONATIONAL INC	1- 2	1/2	0	0.0
O	INFORMATICS	2- 7	6 3/4	0	0.0
O	I.D.A. DATA CORP	1- 1	3/8	0	0.0
O	IPS COMPUTER MARKET.	1- 5	7/8	- 1/8	-12.5
O	KEANE ASSOCIATES	2- 5	3 1/2	0	0.0
O	KEYDATA CORP	4- 12	4 1/4	0	0.0
O	LOGICON	2- 7	3 5/8	+ 1/4	+7.4
A	MANAGEMENT DATA	1- 5	1 3/8	0	0.0
O	NATIONAL CSS INC	18- 42	25	-1 1/2	-5.6
O	NATIONAL COMPUTER CO	1- 1	3/8	- 1/8	-25.0
O	NATIONAL INFO SRVCS	1- 2	1/8	0	0.0
P	ON LINE SYSTEMS INC	12- 29	28 1/2	+3 3/8	+13.4
N	PLANNING RESEARCH	2- 7	3	+ 1/4	+9.0
O	PROGRAMMING METHODS	17- 25	17	0	0.0
O	PROGRAMMING & SYS	1- 1	1	- 1/8	-11.1
O	RAPIDATA INC	2- 24	2 1/4	- 5/8	-21.7
O	SCIENTIFIC COMPUTERS	1- 3	7/8	0	0.0
O	SIMPLICITY COMPUTER	1- 4	1	0	0.0
O	TCC INC	1- 1	1/4	- 1/8	-33.3
O	TYMSHARE INC	6- 13	10 3/4	+ 1/4	+2.3
O	UNITED DATA CENTER	3- 6	3 1/4	0	0.0
A	URS SYSTEMS	2- 8	3 1/8	+ 1/4	+8.6
N	WYLY CORP	3- 11	3 5/8	+ 1/8	+3.5

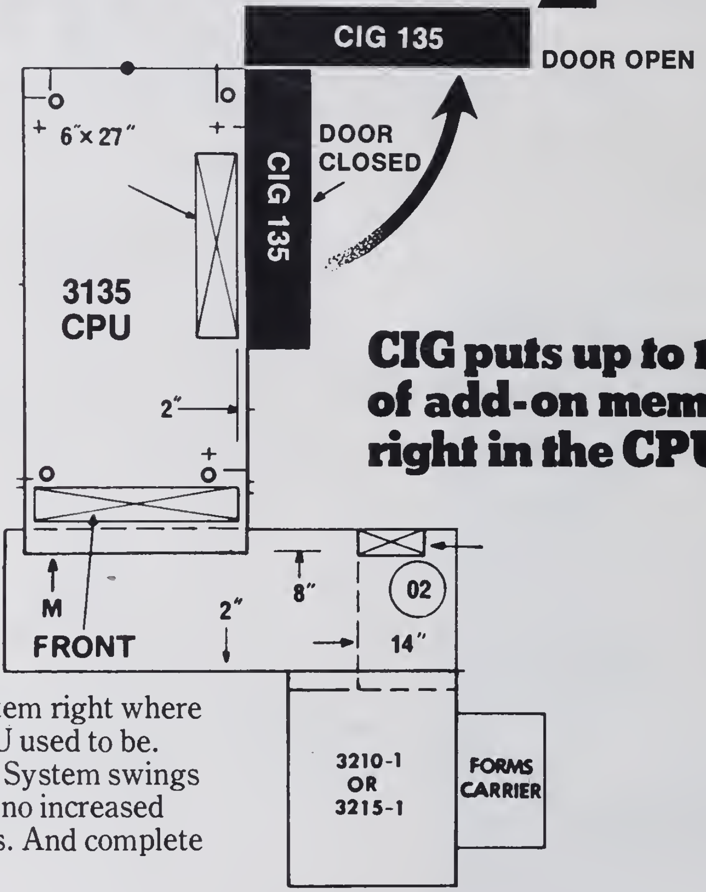
PERIPHERALS & SUBSYSTEMS

EXCH		1973-74 RANGE (1)	CLOSE MAY 2 1974	WEEK NET CHNGE	WEEK PCT CHNGE
N	ADDRESSOGRAPH-MULT	8- 34	7 3/4	0	0.0
O	ADVANCED MEMORY SYS	4- 23	3 3/4	0	0.0
N	AMPEX CORP	3- 7	3 3/4	+ 1/8	+3.4
O	ANDERSON JACOBSON	2- 6	2 3/4	+ 1/4	+10.0
O	BEEHIVE MEDICAL ELEC	4- 10	3 1/2	- 3/4	-17.6
A	BOLT,BERANEK & NEW	6- 12	7 3/8	+ 1/8	+1.7
N	BUNKER-RAMO	6- 19	6 1/4	- 1/4	-3.8
A	CALCOMP	5- 16	10 1/2	+ 7/8	+9.0
O	CAMBRIDGE MEMORIES	8- 17	10 5/8	+ 5/8	+6.2
O	CENTRONICS DATA COMP	13- 39	20 1/2	+1 1/2	+7.8
O	CODEX CORP	9- 19	12	+ 3/4	+6.6
O	COGNITRONICS	1- 3	1 1/8	0	0.0
O	COMPUTER COMMUN.	1- 4	5/8	- 1/8	-16.6
A	COMPUTER EQUIPMENT	1- 3	1 5/8	+ 1/8	+8.3
O	COMPUTER MACHINERY	4- 13	4 1/8	+ 3/8	+10.0
O	COMPUTER TRANSCEIVER	1- 6	1 1/8	- 1/8	-10.0
N	CONRAC CORP	13- 32	18 1/2	+1 3/4	+9.9
O	DATA ACCESS SYSTEMS	1- 3	2	0	0.0
O	DATA 100	9- 19	10 1/4	+ 3/4	+7.8
A	DATA PRODUCTS CORP	2- 5	3 5/8	0	0.0
O	DATA RECOGNITION	1- 3	1/2	0	0.0
O	DATA TECHNOLOGY	1- 5	3 3/8	+ 1/8	+3.8
O	DECISION DATA COMPUT	6- 40	9 1/2	+2	+26.6
O	DELTA DATA SYSTEMS	1- 1	3/4	0	0.0
O	DI/AN CONTROLS	1- 4	1 1/4	0	0.0
N	ELECTRONIC M & M	3- 6	3	0	0.0
O	FABRI-TEK	2- 5	2 1/2	+ 1/4	+11.1
O	GENERAL COMPUTER SYS	3- 9	2 3/4	0	0.0
N	GENERAL ELECTRIC	51- 76	53	+1	+1.9
N	HAZELTINE CORP	4- 9	4 5/8	+ 1/8	+2.7
O	INFOREX INC	2- 23	2 3/4	+ 1/4	+10.0
O	INFORMATION DISPLAYS	1- 2	3/8	+ 1/8	+50.0
O	INFORMATION INTL INC	- 15	8 3/4	0	0.0
A	LUNDY ELECTRONICS	3- 9	2 7/8	0	0.0
O	MANAGEMENT ASSIST	1- 1	1/4	0	0.0
N	MEMOREX	2- 19	4 5/8	+ 1/4	+5.7
A	MILGO ELECTRONICS	12- 28	12 3/4	-1	-7.2
N	MOHAWK DATA SCI	2- 13	3	0	0.0
O	ODEC COMPUTER SYST.	2- 6	1 3/4	0	0.0
O	OPTICAL SCANNING	2- 8	3 5/8	0	0.0
O	PERTEC CORP	3- 9	3 3/8	0	0.0
O	PHOTON	3- 7	3 3/4	0	0.0
A	POTTER INSTRUMENT	2- 9	3 3/8	+ 1/4	+8.0
O	PRECISION INST.	2- 6	1 3/4	+ 1/4	+16.6
O	QUANTOR CORP	4- 10	6 1/4	+ 1/4	+4.1
O	RECOGNITION EQUIP	2- 9	3 7/8	+ 5/8	+19.2
N	SANDERS ASSOCIATES	5- 10	4 3/4	0	0.0
O	SCAN DATA	1- 6	1 7/8	0	0.0
O	STORAGE TECHNOLOGY	11- 34	12	+1 1/4	+11.6
O	SYCOR INC	8- 20	8	- 1/4	-3.0
O	TALLY CORP.	2- 14	3 5/8	- 1/8	-3.3
O	TEC INC	5- 9	5	+ 1/4	+5.2
N	TEKTRONIX INC	30- 55	42 1/2	+2 7/8	+7.2
N	TELEX	3- 8	2 5/8	+ 1/8	+5.0
O	WANGCO INC	7- 13	12	0	0.0
O	WILTEK INC	6- 18	5 1/2	- 1/2	-8.3

SUPPLIES & ACCESSORIES

EXCH		1973-74 RANGE (1)	CLOSE MAY 2 1974	WEEK NET CHNGE	WEEK PCT CHNGE
O	BALTIMORE BUS FORMS	4- 9	5 3/4	0	0.0
A	BARRY WRIGHT	5- 13	6 3/8	- 1/4	-3.7
O	CYBERMATICS INC	1- 3	1 1/4	0	0.0
A	DATA DOCUMENTS	17- 47	46 1/2	+5 1/4	+12.7
O	DUPLEX PRODUCTS INC	6- 10	8 1/2	+ 1/8	+1.4
N	ENNIS BUS. FORMS	-- 8	6	- 1/2	-7.6
O	GRAHAM MAGNETICS	7- 20	8 3/4	+ 3/4	+9.3
O	GRAPHIC CONTROLS	7- 12	10	+ 1/4	+2.5
N	3M COMPANY	64- 91	71 5/8	+ 3/8	+0.5
O	MOORE CORP LTD	41- 65	51	+3 1/4	+6.8
N	NASHUA CORP	34- 58	33 7/8	0	0.0
O	REYNOLDS & REYNOLDS	24- 51	24 1/2	- 3/4	-2.9
O	STANDARD REGISTER	11- 20	14 1/2	- 1/2	-3.3
O	TAB PRODUCTS CO	7- 23	8	-1 1/2	-15.7
N	UARCO	15- 23	21	+1 1/2	+7.6
A	WABASH MAGNETICS	5- [illegible]	5 5/8	- 1/4	-4.2
N	WALLACE BUS FORMS	14- 26	20 3/4	+1 3/8	+7.0

CIG 135: The Swinging Memory.



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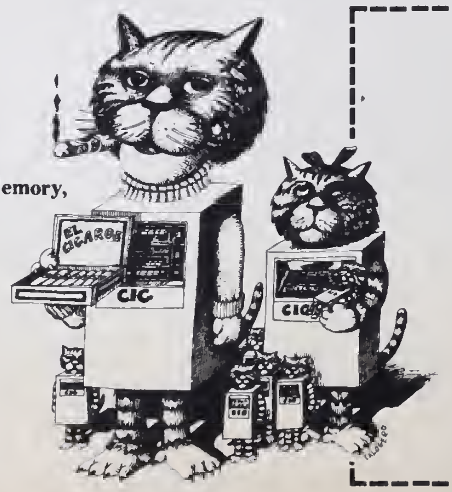

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